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# Procedures for Evaluating Health Impacts Resulting from Development of Energy Resources

Copley International Corp, La Jolla, CA

Prepared for

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# PROCEDURES FOR EVALUATING HEALTH IMPACTS RESULTING FROM DEVELOPMENT OF ENERGY RESOURCES

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16. ABSTRACT
This manual is a compilation of formats, protocols, and procedures that may be used by communities and state agencies to evaluate health impacts resulting from the development of energy resources. The manual also considers ways of using these evaluations to develop plans for coping with health impacts. It is an outgrowth of a study of health problems experienced by impacted communities in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming. Many communities, especially small ones, found that such problems required actions by both elected officials and the general public that were new to the community. This manual was developed to relate what some communities have experienced and to suggest ways that a community may assemble information and organize to avoid or overcome undesirable health impacts from rapid growth.

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|---|---|---|
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Prepared for

ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
OFFICE OF ENERGY ACTIVITY
Under Contract No. 68-01-1949

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## DISCLAIMER

This report has been reviewed by the Office of Energy Activities, Region VIII, U. S. Environmental Protection Agency, and approved for publication. Mention of trade names or commercial products does not constitute endorsement or recommendation for use.

Document is available to the public through the National Technical Information Service, Springfield, Virginia 22161.

# PREFACE

This Manual is a compilation of formats, protocols, and procedures that may be used by communities and state agencies to evaluate health impacts resulting from the development of energy resources. The Manual also considers ways of using these evaluations to develop plans for coping with health impacts. The Manual is an outgrowth of a study of health problems experienced by impacted communities in Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming. Many communities, especially small ones, found that such problems required actions by both elected officials and the general public that were new to the community. There was, and is, a need for guidelines and procedures to do the jobs that have to be done.

Impacted communities have used a variety of approaches in dealing with undesirable health effects. But accounts of these experieces and comparisons of their effectiveness are not easily available to commumities that need to know about them. In some instances, there was uncertainty about assistance that might be available and where to get it. This Manual was developed to make such information easier to obtain and to suggest ways that a community may assemble information and organize to avoid or overcome undesirable health impacts from rapid growth.

The material in this Manual was adapted from many sources. The procedures outlined have evolved over a long period and refinements were made by many users, including the authors of this Manual. The origin of particular procedures and the developers of specific formats cannot be identified for individual acknowledgment. Special mention should be made of the leadership of the Center for Disease Control, Public Health Service, U.S. Department of Health, Education, and Welfare in formulating procedures for evaluating conditions of health and sanitation in communities.

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## HOW TO USE THESE PROCEDURES

### What to Use

Use only the procedures in this Manual that are needed for your purpose. This compilation addresses most of the health-related issues that a community may encounter. There would seldom, if ever, be a need to carryout all of the procedures or complete all of the tables. Use this material selectively. Be sure that you know the application of information before going to the trouble and expense of collecting it. Also, determine what other assessments are being made in your community and coordinate your efforts. Try to develop data and survey instruments that will serve as many purposes as possible without becoming too cumbersome and difficult to manage.

### How to Use the Procedures

These procedures are designed for use as part of the overall community effort to deal with impacts. You probably will find that some of the procedures would be useful in work that already is under way. If you are just beginning to plan your work, you will want to read Handling Health Impacts -- Suggestions for Communities Impacted by Energy Developments[1] and Action Handbook for Small Communites

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[1] Copley International Corporation, 1977. Handling Health Impacts -- Suggestions for Communities Impacted by Energy Developments Prepared for the Office of Energy Activities, U.S. Environmental Protection Agency. Denver, Colorado. (Contract 68-01-1949.)

Facing Rapid Growth.[2] Both are available from the Official Energy Activities, U.S. Environmental Protection Agency, 1860 Lincoln Street, Denver, Colorado 80203.

You probably will use these procedures in work carried out by one or more task forces organized by your Community Impact Committee. Organization of such a Committee is outlined in the Suggestions and the Action Handbook. Planning offices and governmental departments also may find some of the procedures useful in their activities.

After the Community Impact Committee has formed its task forces and decided on the major areas of activity, these procedures should be reviewed to determine which would be helpful. The procedures outlined are grouped in six parts in the next section, Methods and Procedures. To assist you in selecting the parts that may be useful in your work, the following is a brief summary of the information considered:

. Part 1. General information concerning the energy development, or developments, that are expected to have an impact on the community. This information will identify the type of development and enable anticipation of the kinds, magnitude, and duration of impacts that may be anticipated for the community.

. Part 2. Information to enable preparation of a physical and demographic profile of the community that will aid in defining health problems associated with geographic location and population growth. Information will be obtained on health problems that have occurred or are currently present in the community, how the community coped with the problems, and how effective were such efforts.

. Part 3. Information concerning current and anticipated needs for community environmental services such as water supplies, sewage disposal, and solid waste disposal.

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[2] Briscoe, Mephis, Murray and Lamont. 1977. Action Handbook for Small Communities Facing Rapid Growth, Prepared for the U.S. Environmental Protection Agency. (Contract 68-01-3579.)

. Part 4. Information relating to current environmental conditions that may be employed to ascertain land use by type and geographic location; type, conditon, and location of housing and other structures; adequacy of residential water supplies, sewage disposal, and solid waste storage; and premises sanitation.

. Part 5. Information concerning the current status of health with respect to protection against diseases preventable by immunization, occurrence of acute and chronic conditions, sources of health services, and impression of residents with regard to current health problems and adequacy of health services.

. Part 6. Information concerning the adequacy of resources to provide health services. This includes determining the availability and accessibility of both personnel and facilities to meet the health needs of the community in timely and practical ways.

You may also want to review the section on Applications of Information at the same time to get a general idea as to how the data and information you collect will be used.

After you have an indication of the parts that are helpful, you will want to review the detailed outlines in the next section. Keep in mind that the procedures discussed should be adapted to your needs. Use only the material that is required and change it to serve your purpose.

## Where to Get Help

The state and regional planning offices probably were involved in organizing the Community Impact Committee. If the State Health Planning and Development Agency and the Health Systems Agency for your area have not yet participated, you may wish to get in touch with these offices to find out what information and assistance is available if needed. In some instances, special programs have been developed for impacted communities. The Appendix is a list of possible source of information and assistance. Some of these agencies can assist in evaluating the usefulness of the various procedures for your purpose.

# METHODS AND PROCEDURES

## 1. GENERAL INFORMATION CONCERNING ENERGY DEVELOPMENTS

Table 1-1 outlines the information needed concerning each energy development. It is necessary to obtain this general view of each operation in order to identify all of the communities that may be affected by each industrial operation and to determine the number of different developments that may impact your community.

The projected employment estimates and information concerning duration of the activity will aid you in making population estimates. These data also will be useful later on when you consider whether arrangements should be made for temporary or permanent residents. They also provide a guide in preparing schedules for planning and for implementing programs.

Much of this material outlined in Table 1-1 already is available from published or other readily accessible sources. The state planning office or state energy office (see Appendix) probably will be able to provide a great deal of this information that was collected in preparing Environmental Impact Statements. Be sure to take advantage of available material.

After getting together as much information as you can, you then probably will want to get in touch with representatives of the industry and obtain the information that was not available from other sources. It is also a good idea to check the accuracy of the information you already have. This initial contact will give you the opportunity to meet the industry's representative who has been designated to work with the community. If a person has not been appointed, you can request that a responsible offical be named as the community contact.

As indicated above, the information for Table 1-1 usually is available from state or regional offices. These are the best focal points for information concerning all the developments that may affect your community. If you do have to collect the information locally, it is best to do so by personal contacts. The use of a questionnaire is indesirable, especially if requests for the information are made by correspondence. Table 1-1 is for you to complete by using data obtained from various sources. It is not designed to be sent to someone to "fill out".

## Table 1-1

## General Information Concerning Energy Development

Name or other designation of the development: ____________________

______________________________________________

Type of energy: ______________________________________

Principal developer (responsible firm): ____________________

Address: ______________________________________

Person or office designated by developer to provide information concerning health effects: Name ____________________________

Address ______________________________________

### Location of Development

Location of principal site(s) of operations with relation to proximity of highways, established communities, landmarks, and other features as needed for precise identification: ______________________________________

______________________________________________

Topographic maps of area:

| | Name | Number |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |

### Area of Operations

Latitude __________ Longitude __________. Size of area ________ square miles, or ________ acres. Boundaries of area: Indicated on accompanying map ________, or described ______________________________________.

## Table 1-1
(cont'd)

### Activation and Duration

Actual or anticipated date development or construction was begun or will begin:

______________________________________________

Actual or anticipated duration of development or construction phase:

________years________months

Anticipated duration of operation: Indefinite____________Number of years__________

Not known__________

### Employment

Actual or anticipated number of employees by years from initiation of activities:

### Construction Phase

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Year of activity | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Date | 19__ | 19__ | 19__ | 19__ | 19__ | 19__ | 19__ | 19__ |
| No. of employees | | | | | | | | |

### Operating Phase

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Year of Activity | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Date | 19__ | 19__ | 19__ | 19__ | 19__ | 19__ | 19__ | 19__ |
| No. of employees | | | | | | | | |

## Table 1-1
(cont'd)

Communities

New communities planned for construction:________No________Yes

| Name | Location |
|---|---|
| | |
| | |
| | |
| | |

Established communities within 50 miles of the site of development:

| Name | Distance (miles) | Direction | Access highway or road (Number) |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |

Available Reports and Other Information

Sources of information prepared by the developer or others relating to the effects of the development on health and sanitation:

1. Environmental Impact Statement (available):_________Yes________No

| Title | Date | Source |
|---|---|---|
| | | |

## Table 1-1
## (cont'd)

2. Other sources (available):________Yes________No

| Title | Date | Source |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

## 2. PHYSICAL AND DEMOGRAPHIC PROFILE OF THE COMMUNITY

You will have frequent need for general information about your community. It is well to assemble the material outlined in this part and have it available for reference when required. Much of this information will be needed when making some of the evaluations outlined later.

The process of developing the proposed profile helps you gather pertinent references and informs the task force about the community and its residents. No particular surveys or forms are suggested. The primary sources of material are locally available records and publications and information obtained directly from local persons. An appropriate length under each of the suggested headings in the following outline would be about one or two double-spaced typewritten pages. You may wish to develop more information about some aspects of your community, or omit altogether some items in the outline.

The population data for Table 2-1 usually can be obtained from the sources of demographic data listed in the Appendix. However, you may wish to examine such population estimates in light of what you know about employment projections for the industries that affect your community. It is desirable to discuss the basis for the population estimates with the persons who prepared them and with the health and regional planners. Extrapolations from the decennial census are of little value to impacted communities. Local employment projections must be considered. Be sure to get the best possible information because much of your planning will be based on the estimated number of people that will be in the community.

In developing accounts of health conditions in the community, you probably will want to get some assistance from the health planners. Information is desirable concerning the previous health picture, the current situation, and what may happen as a result of energy developments. Obtaining the data indicated in Tables 2-2 and 2-3 is a convenient place to start. Sources of health information are listed in the Appendix. You probablly can get information for your county but it is unlikely that data will be available for specific communities. County rates can be compared with state and national rates to give you some idea of relative severity of health problems in your area.

Insofar as possible sources of information, including personal communications, should be indicated by citation in the text and the title and other information should be listed under References.

## Suggested Outline for Developing Physical and Demographic Profile of the Community

### Historical Background

- Summary of origin and settlement of the community.
- Political and economic history.
- Exploration and development of energy resources.
- Other factors pertinent to development of the community and its natural resources.

### Physical Characteristics

- Prominent topographic features - description and location with respect to distance from the community and site of energy development.

- Features associated with precipitous or hazardous events such as flooding, torrential rains, tornadoes, persistent winds, exposures conducive to blowing dust.

### Climate

- Characteristic climatic features
- Seasonal temperature ranges
- Types and amounts of precipitation
- Prevailing winds

### Land Use and Economy

- Agriculture and industry before and after initiation of energy development

- Relative social and economic significance of various types of employment and commercial developments

- Recent or anticipated changes caused by energy developments

### Cultural and Social Characteristics

- Ethnic background and composition of the community

- Customs and preferences with respect to development of natural resources, health services, education, economic growth, industrical developments, and related factors.

### Population

- Long-term trends in population before energy developments were intiated.

- Recent or anticipated trends as results of energy developments.

- Interpretative narrative based on Data in Table 2-1, Table 2-2, Table 2-3, and other available related information.

Health

- General description of health conditions in the community.
- Apparent variations, if any, in health conditions among various population groups or in various geographic locations.
- Known or apparent influences of climate and topography on health.
- Recognized or suspected relation of occupations to health.
- General trends in morbidity and mortality.
- Identified or suspected causes of changes in rates of disease and death.
- Problems that have developed as a result of energy development, what measures were taken to cope with them, and how effective the measures were.
- Anticipated changes in health conditions as a result of energy development.
- Interpretative narrative based on Table 2-2 and Table 2-3 and other related available data.

References

- Sources of information. (Notations in text to reports, literature, and personal communications.)

Table 2-1

## Trends in Population by Age*
1950-1979

(County, State)

| | Number of Persons by Age Group in Years | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Year** | < 1 | 1-4 | 5-14 | 15-24 | 25-34 | 35-44 | 45-64 | 65+ | All Ages |
| 1950 | | | | | | | | | |
| 1960 | | | | | | | | | |
| 1970 | | | | | | | | | |
| 1971 | | | | | | | | | |
| 1972 | | | | | | | | | |
| 1973 | | | | | | | | | |
| 1974 | | | | | | | | | |
| 1975 | | | | | | | | | |
| 1976 | | | | | | | | | |
| 1977 | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

* Source of data: ____________________

** Years for which the population is estimated are indicated with an asterisk.

## Table 2-2

### Trends in Population, Births, Deaths, Infant Deaths, Fetal Deaths, and Maternal Deaths
### 1960-1979

(County, State)

| Year | Estimated Population July 1 | Births | | Deaths | | Infant Deaths | | Fetal Deaths | | Maternal Deaths | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Number | Rate[1] | Number | Rate[1] | Number | Rate[2] | Number | Rate[2] | Number | Rate[3] |
| 1960 | | | | | | | | | | | |
| 1970 | | | | | | | | | | | |
| 1971 | | | | | | | | | | | |
| 1972 | | | | | | | | | | | |
| 1973 | | | | | | | | | | | |
| 1974 | | | | | | | | | | | |
| 1975 | | | | | | | | | | | |
| 1976 | | | | | | | | | | | |
| 1977 | | | | | | | | | | | |
| 1978 | | | | | | | | | | | |
| 1979 | | | | | | | | | | | |

[1] Per 1,000 estimated midyear population

[2] Per 1,000 live births

[3] Per 10,000 live births

Table 2-3

### Trends in Numbers and Rates of Deaths Per 100,000 Population by Principal Causes, by Place of Residence 1960-1979

____________________
(County, State)

| | Cause* of Death | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Diseases of the Heart (390-398; 402; 404 410-429) | | Malignant Neoplasms (140-209) | | Cerebro-vascular Diseases (430-438) | | Arterio-sclerosis (440) | | Influenza and Penumonia (470-474; 480-486) | | Bronchitis, Emphysema, and Asthma (490-493) | | Certain Causes of Mortality in Early Infancy (760-769.2; 769.4-772; 774-778) | | All Accidents Except Motor Vehicle (E800-E807; E825-E949) | | Motor Vehicle Accidents (E810-E823) | | All Causes | |
| Year | No. | Rate | No. | Rate | No. | Rate | No. | Rate | No. | Rate | No. | Rate | No. | Rate | No. | Rate | No. | Rate | No. | Rate |
| 1960 | | | | | | | | | | | | | | | | | | | | |
| 1970 | | | | | | | | | | | | | | | | | | | | |
| 1971 | | | | | | | | | | | | | | | | | | | | |
| 1972 | | | | | | | | | | | | | | | | | | | | |
| 1973 | | | | | | | | | | | | | | | | | | | | |
| 1974 | | | | | | | | | | | | | | | | | | | | |
| 1975 | | | | | | | | | | | | | | | | | | | | |
| 1976 | | | | | | | | | | | | | | | | | | | | |
| 1977 | | | | | | | | | | | | | | | | | | | | |
| 1978 | | | | | | | | | | | | | | | | | | | | |
| 79 | | | | | | | | | | | | | | | | | | | | |

s of death and code from International Classification of Diseases Adapted for use in the U.S.; PHS Pub. No. 1693 (1965).

## 3. COMMUNITY ENVIRONMENTAL SERVICES

This section outlines procedures for evaluating the major environmental services available in your community. For our purpose, "community environmental services" include water supplies, sewage disposal, and solid waste disposal. The best sources of information are the local offices responsible for these facilities. In areas where state agencies have responsibility for planning facilities and developing standards for communities, these offices should be able to give you information to supplement that available in your community. State and sub-area planning offices also are involved in projection of needs for environmental services. You may also want to ask these offices for information (see Appendix). Some state offices publish annual summaries of data that may be used to complete this section.

No forms or survey instruments are suggested for securing the information outlined in this section. All of the data needed probably can be obtained from published sources, public records, or public officials. Tables similiar to those on the following pages may be used for abstracting data. Sources of information should be noted on the tables and a complete citation should be given of references.

These tables may not be necessary if there is only one source for a service. In these instances, information may be given in the narrative. Maps of water distribution and sewage collecting systems are desirable to supplement the tables.

## Suggested Outline for Evaluating Community Environmental Services

### Water Supplies and Distribution Systems

- Provide interpretative narrative of data in Table 3-1, Table 3-2, and Table 3-3.

- Describe current sources of domestic water used in the commutnity, present and projected rates of consumption, and adequacy of supplies.

- Seasonal variations in use (summer vs winter).

- Indicate quality of domestic water as determined by applicable state or local standards or the 1962 U.S. Public Health Service drinking water standards for domestic water supplies. Evaluation of quality should include total dissolved solids, fluorides, hardness, and coliform concentrations.

- Describe additional sources of domestic water, if required.

- Description of water distribution systems including:
  - number of residences to which services are provided
  - number of residences to which the distribution systems are not accessible
  - number of residences that have access to the distribution system but are not served by it
  - number of vacant building lots to which distribution systems are accessible
  - hydrostatic pressure
  - type of pipe network
  - fire protection including hydrant locations, main size, number of personnel, number of vehicles, and community classification by national underwriters or other rating group.

- Sources of water for residences not served by distribution systems.

- Current and anticipated water supply problems such as excess fluorides, or mineral content, limited storage capacity, excessive hydraulic gradient in supply system, zones of inadequate pressure and supply.

## Sewage and Waste Water Treatment

- Provide interpretative narrative for data in Table 3-4 and Table 3-5.

- Description of the types of systems used in the community, number of each type, whether community is completely or partially sewered, use of septic tanks, means of effluent disposal, and acceptability of the methods from an environmental standpoint.

- Describe annual trends in average sewage flows and seasonal variations.

- Outline means for increasing capacity, if needed.

- Describe adequacy of sewage collecting systems including:
  - number of residences to which the collecting systems are providing services
  - number of residences to which the collecting systems are not accessible
  - number of residences that have access to the collecting systems but are not served by it
  - number of vacant building lots to which the collecting systems are accessible.

- Describe methods of sewage disposal used by premises not served by collecting systems.

- Use of septic tanks, percolation rates, number of systems, current or anticipated problems such as bad soil conditions and close ground water.

## Table 3-1

## Community Water Supplies

____________________
(Community)

| Identification (Name or Location) | Ownership | Source | | Storage | | Treatment | | Number of Users |
|---|---|---|---|---|---|---|---|---|
| | | Type | Capacity (gal.*/day) | Type | Capacity (gal.*) | Type | Capacity (gal.*/day) | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

All Supplies:

Capacities ____________________ Source ☐ Storage ☐ Treatment ☐

Number of Users ______________________________ ☐

*Gallons X 1,000

## Table 3-2

### Current Trends in Use of Domestic Water
### 1950-1978

(Community)

Number of Users and Average Daily Use (gal. x 1,000)

| Year | Residences | | Businesses | | Industries | |
|---|---|---|---|---|---|---|
| | Number | Amount Used | Number | Amount Used | Number | Amount Used |
| 1950 | | | | | | |
| 1960 | | | | | | |
| 1970 | | | | | | |
| 1971 | | | | | | |
| 1972 | | | | | | |
| 1973 | | | | | | |
| 1974 | | | | | | |
| 1975 | | | | | | |
| 1976 | | | | | | |
| 1977 | | | | | | |
| 1978 | | | | | | |

## Table 3-3

## Projected Average Daily Requirements for Future Use of Domestic Water 1976-1981

______________________________
(Community)

Projected Daily Use (gal. x 1,000/day)

| Year | Residential | Business | Industry | All Users |
|---|---|---|---|---|
| 1976 | | | | |
| 1977 | | | | |
| 1978 | | | | |
| 1979 | | | | |
| 1980 | | | | |
| 1981 | | | | |

## Solid Waste Disposal

- Provide interpretative narrative for data in Table 3-6 and Table 3-7.

- Describe services available for collecting garbage and refuse from residential and commercial premises:
  - number, type, and capacity of collecting vehicles
  - number of collections per week

- Describe suitability of existing methods of disposal--land fill, dump, or others--from an environmental standpoint.

- Evaluation of adequacy of existing systems to meet current and future requirements including:
  - number of residences where garbage and refuse collections are made
  - number of residences where garbage and refuse collections are not made
  - number of vacant building lots on route where refuse and garbage collections are made
  - current and projected adequacy of disposal site(s)

- Indicate methods of solid waste disposal used where collections are not made through an organized system.

- Current or potential problems with land fill or dump, such as, drainage, ground water contaimination, odor, and smoke.

- Availability of additional land, limitations to use.

## Air Pollution

- Indicate current standards applicable to the community.

- Describe location of air monitoring stations that reflect conditions in the community.

- Discuss relations of applicable measurements to standards.

Table 3-4

Municipal Facilities for Sewage and Waste Water Treatment

____________________________
(Community)

| Identification (Name or Location) | Type | Daily flows (gal. x 1,000/day) | | Means of effluent disposal |
|---|---|---|---|---|
| | | Current average | Capacity | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

All Facilities:

Current average daily flow: ☐

Capacity: ☐

## Table 3-5

## Current and Projected Trend in Sewage Flows 1950-1981

______________________________________________
(Community)

| Year* | Population | Average Number of Gallons ( x 1,000) /Day |
|---|---|---|
| 1950 | | |
| 1960 | | |
| 1971 | | |
| 1972 | | |
| 1973 | | |
| 1974 | | |
| 1975 | | |
| 1976 | | |
| 1977 | | |
| 1978 | | |
| 1979 | | |
| 1980 | | |
| 1981 | | |

*Years for which the population is estimated, indicate with an asterisk.

## Table 3-6

## Municipal Facilities for Solid Waste Disposal

____________________
(Community)

| Identification (Name or Location) | Ownership | Type | Daily Use (tons x 1,000/day) | |
|---|---|---|---|---|
| | | | Current | Capacity |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

All Facilities:

Current average daily use: ☐

Capacity ☐

## Table 3-7

### Current and Projected Trends in Production of Solid Waste
1950-1981

_______________________________
(Community)

| Year* | Population | Tons/Day ( x 1,000 ) |
|---|---|---|
| 1950 | | |
| 1960 | | |
| 1970 | | |
| 1971 | | |
| 1972 | | |
| 1973 | | |
| 1974 | | |
| 1975 | | |
| 1976 | | |
| 1977 | | |
| 1978 | | |
| 1979 | | |
| 1980 | | |
| 1981 | | |

*Years for which the population is estimated, indicate with an asterisk.

## 4. CURRENT ENVIRONMENTAL CONDITIONS (ENVIRONMENTAL SURVEY)

You may find that not enough information is available for your task force to determine the extent of unsatisfactory environmental conditions. This situation is most likely to develop when rapid population growth has already commenced. A block-by-block survey is a relatively quick and inexpensive way to accumulate data that will be useful for a variety of planning activities. The procedures outlined below will enable you to gather information concerning the following factors:

- Location and extent of various types of land use
- Types and condition of dwelling unit
- Source of domestic water
- Methods and adequacy of sewage disposal
- Methods and adequacy of storage and disposal of solid wastes
- Location of breeding places and harborage of vectors and reservoirs of disease-producing agents
- Location of dilapidated structures
- Location of objectionable environmental conditions

### Maps

Your first need for this activity is an accurate map of the community. Sources of maps are the local government offices, such as the mayor's and tax assessor's or the offices providing environmental services. Maps of water and sewer systems may be suitable for use in the environmental survey. Other possiblities are the area planning offices and health planning agencies. The state highway office will be able to offer suggestions and may be able to provide aerial photographs at a scale suitable for use in the environmental survey. If maps are not available from these sources, satisfactory ones can be prepared with the use of an accurate, hand-held compass and automobile odometer.

## Identification of Blocks

The block in the community should be identified by consecutive numbers beginning at the northwest extent of the area. Blocks to the east are numbered sequentially until the community limit is reached. The series of numbers is continued with the second tier and subsequent tiers of blocks. The numbers for each tier begin at the western limit, and consecutive numbers are assigned to the blocks eastward.

In larger communities, or when otherwise convenient, the community may first be subdivided into sectors delineated by natural or cultural features, e.g., rivers, railroad tracks, highways or other major thoroughfares, parks, business districts, or obvious socioeconomic areas. If this is done, a letter is assigned to each sector and blocks within the sectors are numbered, as outlined above. In this case, block would be designated by both a letter and a number, e.g., A-1, A-2, B-1, B-2, etc. This system is useful in distinguishing sections, or neighborhoods, of the community that obviously have homogenous characteristics, e.g., a mobile home community, a "tent city," or a grossly deteriorated area.

Census tracts are designated for few impacted communities. If they are available, however, use them by all means rather than devise another system.

## Field Observation

Each block in the area to be evaluated is inspected from an automobile driven at slow speed. The inspector records his observations and indicates to the driver the appropriate rate of travel and when stops are necessary. The survey should begin at the northwest corner of each block, proceed eastward, and then continue by making right turns to keep the area being surveyed to the inspector's right. Only general features, such as the type of land use and other easily observable aspects, are recorded during the drive around the block. If there is an alley, observation of other conditions then are made by driving through the alley. When adequate observations cannot be made from the automobile, the inspector should walk to secure a better view. Unless special arrangements have been made, the inspector ordinarily will not enter private property.

In rapidly expanding communities, mobile and temporary housing, as well as other types, may develop in areas where streets and blocks have not been defined. In these cases, the inspector should indicate the location of the area as accurately as possible on the community map and identify it with an appropriate notation so that the relevant Environmental Survey Form can be related to the area. (A recommended Environmental Survey Form and tables for compiling data are provided at the end of this section (see Figure 4-1 and Tables 4-1 through 4-8.) Such areas are evaluated and data transferred to the data consolidation forms, described below, as are the data for defined blocks. The block outline on the Environmental Survey Form will have to be modified or a separate sketch prepared. If the area is homogenous, the number of housing units may be noted and the area evaluated as a whole.

## Use of the Environmental Survey Form

Observations are recorded on the form illustrated in Figure 4-1. The block number and name of the intersecting streets at the northwest corner, where observations commence, are entered first on the form. The name of the other boundary streets are noted as they are observed. Names are entered from the community map if there are no street signs. During the course of the inspection, variations in the shape of the block, streams, alleys, and other features are noted. A rough approximation of the apparent property lines of individual lots is recorded on the form during the inspection. The purpose is not to identify boundaries as much as to indicate the premises to which the symbols pertain. This assures assigning the code symbols to the correct location when data are transferred to summary forms or illustrations. Each lot is numbered consecutively from the start of survey of each block. The lot on the northwest corner is number 1, the next number 2, and so on. If house numbers are visible they should be recorded, as well. No particular effort should be made, however, to ascertain the specific addresses for houses on which numbers are not displayed.

If is advisable to follow the same pattern in recording the code symbols on the survey form. Both recording and transcription are facilitated if observations are made and recorded in the same sequence for each premise. The arrangement shown in Table 4-1 suggests the following order of observations:

1. A determination is made as to whether or not the use is residential or non-residential.
2. If residential, the type of dwelling unit it identified and recorded.
3. If non-residential, the type of use is observed and recorded.
4. The condition of the principal structure is determined and recorded.
5. The method of solid waste storage is observed and recorded.
6. The type of sewage disposal is observed and recorded.
7. The source of domestic water is determined and recorded.
8. The condition of the premises is observed, and specific deficiencies are noted and recorded.

The appropriate symbols are always recorded on the form in the same sequence. The first is recorded at the place on the form depicting the front (streetside) of the property being inspected. The other symbols are recorded sequentially, in the order indicated above, toward the place on the form indicating the back of the premises. An example of a completed form is illustrated in Figure 4-2.

## Code for Land Use and Environmental Conditions

Table 4-1 lists the symbols used for recording land use and environmental conditions observed during the inspection. The inspector should become familiar with these symbols so that constant reference to the list is not necessary. It will be noted that the letters used for each symbol usually suggest the factors and conditions to be evaluated. In instances when this is not done, other letters will be necessary to avoid repetition. Table 4-1 should be duplicated and kept on the clipboard with the Environmental Survey Forms. For specific local needs, additions or modifications to the code may be desirable to measure factors or conditions not anticipated. Duplication of symbols already used in the code should be avoided when making changes or additions. Information concerning observations or impressions not considered in the code should be noted on the form when desirable for clarification or to provide more detail. Procedures for use of the code in recording observations are given in Table 4-2.

## Consolidation of Data

The data obtained from individual premises is consolidated to characterize conditions for each block. This should first be done on the Environmental Survey Form by entering the totals for the block in the spaces provided at the bottom of the forms. The data for each block then should be transferred to summary forms. Tables 4-3, 4-4, and 4-5 illustrate forms useful for this purpose. Preferably, the field data should be transferred to these forms by the inspector the same day or the day following the survey. This facilitates recall of abbreviations and permits repeat visits, if required, while the survey is in progress in nearby areas. It should be emphasized that completion of these forms is an intermediate step in analysis of data. Their usefulness in reports and for public display is limited.

## Display of Information

When the data are consolidated, the information developed from them should be displayed on maps of suitable size and scale. The maps used for the enumeration of blocks may be adaptable for this purpose. The overall dimension should not exceed 3 by 4 feet. The scale should enable depiction of blocks at a size of 1/2 to 3/4 inch for the shortest dimension. In some communities, a map for the entire area prepared at a small scale may be necessary for orientation. Maps of the sectors that comprise the area then can be prepared on a larger scale for plotting information. The selection of scales should be governed to a large extent by the availability of maps of community environmental services and other maps of the community. Information also should be sought from the state and local health planning agencies concerning formats and symbols for depicting environmental conditions relating to health and sanitation. The list of selected references following this section also may be helpful for this purpose.

A convenient procedure is to use a basic map on which is indicated the outline of blocks, names of streets, and prominent areas or landmarks. The maps may be reproduced in sufficient quantity for plotting each group of conditions, such as condition of housing, land use, and sanitiation services, on separate maps. An alternative is to overlay the basic map with clear acetate sheets on which the various conditions are plotted. The latter has the advantage of enabling visual presentation of combinations of conditions by superimposing the sheets depicting the various conditions.

The mechanical processes of preparing a basic map, plotting data, and choices of symbols and colors are largely the preference of the preparer. It is advisable, however, to also review these matters with the local health planning agencies to determine if conventions specifying these steps have been adopted. This will assure uniformity and compatibility with similar work in the area. Generally, commercially available acetate transfers used in drafting are best for symbols and color blocks. Legend symbols, such as those used on maps and for other purposes, are available in a variety of styles that may be used for this purpose. Colors or shading patterns also are available in many forms. In using transferable colors or shading patterns, the worst conditions ususally are depicted by red or a dark pattern, the best conditions by blue or a light pattern, and intermediate conditions by intergrades of colors or shades between these.

The following types of information should be displayed on maps. Separate maps may be used for each factor, or related ones may be displayed on the same maps.

- Land use
- Types of housing
- Water distribution system and sources of water for domestic use
- Sewerage collecting system and type of sewage disposal
- Land drainage
- Solid waste storage
- Environmental deficiencies

Local conditions and needs may indicate the necessity of other displays or suggest that some of those listed would not be useful. Only those required for evaluating conditions of health and sanitation should be included. The purpose, in this context, is not to develop an exhaustive characterization of all aspects of the community.

The following general suggestions are offered for preparation of the maps listed above. In determining the types of maps to be prepared, consideration should be given to the possibility of enhancing their usefulness by depicting combinations of factors on the same map. For example, condition of the physical structures and sanitary conditions often can be illustrated together to advantage. The quality and condition of housing is correlated with well-maintained environs and presence of adequate community environmental services. Local circumstances will suggest when such combination of illustrations is desirable. For clarity and convenience, each of the principal types of maps are considered separately in these suggestions.

Land Use. Illustrations of land use may be prepared from the data in Table 4-3. Unless there are indications otherwise, the mininum number of categories should be depicted in the initial presentation. In many instances, residential and non-residential use may suffice. In communities where population is growing rapidly, categories that distinguish between temporary, mobile, and permanent dwellings may be desirable. Locations of vacant areas and recreational areas are useful in planning for community growth. The information accumulated, as outlined in Parts 1 through 3 will be useful in determining the categories to be included in the initial illustration of land use.

Difficulty is seldom encountered in determining whether a given block is primarily residential or non-residential. A visual comparison of the data in the total columns of Table 4-3 is usually adequate without a separate tabulation and calculation.

If the proportion of business and non-business is about the same, or if either use is as much as 25 percent of the total, the data on the survey form for the block in question usually will indicate the segments of the block where a specific use clearly is dominat. The appropriate color or shading pattern then can be applied to that segment. Use of more than one indicator for a block is helpful to illustrate areas where transition in types of land use occurs.

Type of Housing. Data concerning type of housing also is available from Table 4-3. Such information is especially useful for a community where rapid growth has occurred or is in progress. In such instances, temporary or mobile housing may be concentrated or interspersed with more permanent types of dwellings. It is important to relate these areas to availability of community environmental services (Part 3). If temporary or mobile housing is present adjacent to or in established communities where streets have not been constructed and, consequently, individual blocks are not delineated, the approximate boundaries of such areas should be delineated on the display maps. If the area is generally homogenous with respect to type and condition of housing, environmental services, and environmental conditions, the entire area may be mapped as would be an individual block.

A suitable color code should be selected for the type of housing to be illustrated on the map. Seldom, if ever, will it be necessary to depict all of the types of housing indicated on Table 4-3. The important distinctions to make are between the permanent type dwelling and the temporary or mobile types that frequently occur in "boom town" situations. As indicated above, a blue color or a light shading pattern should be used to represent the most desirable type of housing and red or a dark shading pattern for the least desirable. Intermediate types should be depicted by intermediate colors or shadings. When more than 75 percent of housing is of one type, the entire block should be shown as that type. Multiple types can be represented by combinations of colors or shading patterns, as suggested for indicating types of land use. Because dwelling units may be sparsely distributed in some locations within communities, especially on the periphery, a symbol code should also be used for depicting location of one or a few units. The number of units to be indicated individually will depend on local circumstances. Generally, fewer than five units should be shown by a separate symbol for each unit. This procedure is convenient when the block contains a preponderance of one type but also has a few of another. The latter can be shown individually by superimposing the appropriate symbol on the background indicating the predominant type.

Condition of Housing. Data from Table 4-4 are used to illustrate condition of housing. Note that condition of the dwelling unit is being illustrated without reference to type of unit. As indicated above, in some instances, it may be convenient and desirable to illustrate types and conditions on the same map.

As with the illustrations previously considered, the objective is to reflect predominant conditions for the block. If 75 percent or more of the dwelling units on a block are in the same condition, and if the others are not extremely different, it generally is preferable to apply the appropriate indicator, color or shading pattern, to entire block. Multiple indicators can be used, as mentioned in connection with the other maps. Also, the condition of one or a few units that differ from that of the others on the block may be shown by superimposing a symbol or another indicator of appropriate size at the proper location on the indicator that depicts the prevalent conditions on the block.

The number of categories used to describe conditions of housing will be determined by the extent of detail needed in the community. Generally, three categories are sufficient: good, fair, and poor. The classification of "new" and "good repair" used in Table 4-4 would be placed in the "good" category, "minor repairs" in the "fair" category, and "extensive repairs" and "dilapidated" in "poor". Good conditions should be depicted by a blue color or light shading pattern, fair by yellow or an intermediate shading pattern, and poor by red or a heavy shading pattern.

Domestic Water. Sources of domestic water may be effectively illustrated on a map that also indicates the municipal water distribution system(s). Data for preparation of this map will be available from the work outlined in Part 3 and from those recorded in Table 4-5. By illustrating these two sets of data together, the possibility of making connections to the existing system, or extending the system to unserved residences, can easily be visualized.

Symbols used on the map should be selected to reflect the municipal water supply as the best situation and an open well as the least desirable. A well with a pump should be indicated as an intermediate condition.

Sewage Disposal. Illustration of methods of sewage disposal and the sewage collecting system also may be illustrated advantageously on the same map. The sources of data are Part 3 and Table 4-5. The methods of display should be essentially the same as for the sources of water. Usually, only three categories are required. Indoor plumbing should be depicted as the best condition, no facilities for sewage disposal as the worst, and privy or frostproof toilet as the intermediate condition. Local circumstances and requirements may, of course, necessitate other categories.

Solid Wastes. In communities where collection, disposal, or storage of solid wastes is a significant problem, methods of refuse storage on premises should be illustrated on a separate map. In other circumstances, these data may be included on the same map illustrating other environmental conditions. Three categories usually are adequate. The best situation is covered containers of satisfactory construction, the worst is unconfined litter or burning, and any inadequate container is intermediate. Data are obtained from Table 4-5.

Environmental Conditions. The illustration of environmental conditions from the data in Table 4-4 may be simple or detailed, depending on local requirements. It seldom is necessary to depict the category of "well-kept" on the map. In some cases, only an indication of blocks with any objectionable sanitary conditions may be adequate without specifically identifying the types of conditions. Other circumstances may require detailed illustration by type and specific location. If distinction of types is not indicated, any means of identifying the blocks involved is appropriate. For example, a red overlay may be used or a color or symbol code can be devised.

Where identification of the type of condition is desirable, each type should be assigned a specific indicator or symbol. These may be used singly or in combinations. Symbols have the advantage that location can be approximated by appropriate placement of the symbol. In some instances, it is desirable to develop a map illustrating a single condition or specific combination of conditions, for example, the location of lots overgrown with weeds or the location of lots with large animals. The data consolidated in Table 4-5 are sufficiently detailed for this.

### Use of Illustrations

The maps prepared as outlined above have obvious application of making a forceful display of sanitary conditions of the environment. When presented in combination with the illustration prepared from the data related to health conditions (Part 3) a convincing picture of the interrelation of health and environmental factors is developed. The maps also are operational tools that enable determination of the relative magnitude of problems and assignment of priorities for remedial programs. Together with other information, the maps provide indications of the types of corrective and preventive measures. For example, desirable locations of health services and advantageous extensions of community environmental services can be determined from them. The maps also aid in evaluating programs and provide the means for easy reassessment of conditions.

When the maps depicting land use and condition of housing are prepared, several prominent characteristics of the community become apparent that may not have been as evident or as well defined. For example, the various socioeconomic sectors -- industrial, commercial, and residential areas -- will be clearly delineated. The other prominent types of land use also will be evident. Areas that should be selected for early or intensive attention will be apparent, as will be parts of the community where specific problems are less significant.

### Tabular Compilations

The data consolidated in Table 4-3, 4-4, and 4-5 also provide the basis for tabular presentations of statistical information. These are necessary for quantitation of conditions and are essential to complement the illustrative information on the maps. Both the maps and the tabular material are needed for effective analysis.

The tables are generally organized to enable comparisons of conditions in various sectors or neighborhoods, for various types of housing, and other factors. Some examples of general forms of arrangements are illustrated in Tables 4-6, 4-7, and 4-8. Local requirements and conditions will suggest the factors to be considered and the appropriate arrangement of numerical information. The following are some examples:

- Distribution of residential units, by type, by socioeconomic area.

- Condition of housing, by sector or neighborhood.
- Environmental deficiencies, by type, by sector or neighborhood, by type of dwelling.
- Source of water for domestic use, by type, by sector or neighborhood, by type of dwelling.
- Method of sewage disposal, by type, by sector or neighborhood, by type of dwelling.
- Land drainage.
- Environmental deficiencies, by sector or neighborhood, by type of dwelling.

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Wyoming Department of Health and Social Services. Community Health Analysis for Sheridan, Wyoming, March 1970. Office of Comprehensive Health Planning.

Public Health Service. Community Disease Control Demonstrations. National Communicable Disease Center. Atlanta, Georgia.

Public Health Service. Community Disease and Immunization Survey. National Communicable Disease Center. Atlanta, Georgia.

Table 4-1

Codes for Land Use and Environmental Conditions

LAND USE

Residential

Units attached to integral foundations:

| | |
|---|---|
| R-1 | Single residence |
| R-2 | Double residence (Duplex) |
| R-3 | Multiple residence (Apartment building) |
| M | Motel |
| H | Hotel |

Residential units not permanently affixed to integral foundations:

| | |
|---|---|
| MH | Mobile home |
| HT | House trailer |

Non-Residential

| | |
|---|---|
| BO | Business producing any type of organic refuse |
| BN | Business not producing any type of organic refuse |
| IO | Industry producing any type of organic waste |
| IN | Industry not producing any type of organic waste |
| OB | Office building |
| PU | Public utility |
| I | Institution |
| R | Recreational area |
| V | Vacant lot or area |
| ON | Other - indicate type |

MULTIPLE USE (combination of residential and non-residential use)

Condition of Structure

| | |
|---|---|
| NW | New |
| GR | Good repair |
| MR | Needs minor repairs |
| ER | Needs extensive repairs |
| DL | Dilapidated |
| -V | Vacant |

Solid Waste Storage

| | |
|---|---|
| S | Satisfactory container |
| U | Unsatisfactory container |
| L | Unconfined litter |
| B | Burning |
| OT | Other - indicate type |
| NO | Not observed - unable to determine |

Sewage Disposal

| | |
|---|---|
| P | Privy |
| FP | Frost-proof toilet |
| ID | Indoor plumbing |
| OS | Other - indicate type |
| NN | Not observed - unable to determine |

Water Source

| | | | |
|---|---|---|---|
| W | Open well | NO | not observed - unable to determine |
| WP | Well with pump | | |
| CW | Municipal supply | | |
| OW | Other - indicate type | | |

Condition of Premises

| | |
|---|---|
| WK | Well kept |
| DO | Dilapidated outbuildings |
| LJ | Large items of junk |
| OG | Overgrown weeds |
| RH | Rodent harborage |
| SW | Standing water |
| ST | Septic tank overflow |
| DC | Dogs or cats - indicate number observed |
| CH | Chickens or other domestic fowl |
| HR | Horses |
| CO | Cows |
| PI | Pigs |
| GA | Goats |
| AP | Air pollution sources |
| OO | Other - indicate other objectionable conditions |

## Table 4-2

## Directions for Recording Observations

### LAND USE

This information is needed to determine the principal purpose for which each block of the community is being used in order that the adequacy of community sanitation services can be determined and data obtained for planning additional services where needed.

Residential Units - any type of dwelling unit used for shelter by the population. A distinction is made between units attached to integral foundations and those which can be moved without dismantling or disturbing the structural integrity of the unit.

#### Units Attached to Integral Foundations

| | |
|---|---|
| R-1 | Single residence intended for occupancy by one household group. |
| R-2 | Double residence - a duplex or other unit, such as an apartment in a private residence, intended for occupancy by two household groups. |
| R-3 | Multiple residence - intended for occupancy by three or more household units. No special efforts should be made to determine the precise number of units,but if an estimate is possible, indicate the estimated number by R-3 (6), R-3 (14), etc. |
| M | Motel - indicate known or estimated number of units by M-12, M-25, etc. |
| H | Hotel - indicate known or estimated number of rooms by H-10, H-23, etc. |

#### Units Not Attached to Integral Foundations

| | |
|---|---|
| MH | Mobile home - a movable unit not designed for frequent relocation. Often has awnings attached or is located adjacent to a sheltered concrete slab. Usually provided with electrical, water, and sewer connections and solid waste is collected. |

If located on a single lot, evaluate as a separate residence.

If a mobile home community, sketch boundaries on survey form; indicate number of units by MH-6, MH-20, etc.; and evaluate community as a single premise.

Indicate the number of vacant spaces if apparent, e.g. 6-V.

HT House trailer - (include Motor Homes in this category) distinguished from a mobile home by ease of transportation and anticipated greater frequency of relocation. Often provided with electrical, water, and sewage connection at parking site and, additionally, has self-contained water reservoir and sewage holding tank.

If located on a separate lot, evaluate as a single residence. Indicate by -L if apparently has been parked for more than two weeks.

If located in a trailer park, sketch park boundaries on survey form; indicate number of units by HT-10, HT-13, HT-25, etc., and evaluate park as a single premise. Indicate the number of vacant spaces if apparent, e.g. 5-V.

OM Other mobile or easily movable residential units, such as tents, motor homes, or campers. If located on a separate lot, indicate type and evaluate as a separate premise. This type of unit usually will be included in evaluation of trailer parks.

Non-residential Units

BO Business establishments where any type of organic refuse is produced. This category includes restaurants, food stores, flower shops, and other businesses that discard putrescible material.

BN Business establishments where organic refuse is not produced. Examples are service stations, offices, theaters, garages, machine shops, parking lots, warehouses, etc.

IO Industrial establishments where any type of organic waste is produced. For example, canning plants, meat processing plants, fruit and vegetable packing sheds.

IN Industrial establishments where organic wastes are not produced. This category includes manufacturing and processing operations.

### Solid Waste Storage

| | |
|---|---|
| S | Satisfactory containers - covered metal or plastic cans, covered storage bins, or other arrangements that prevent access by flies and rodents. |
| U | Unsatisfactory containers - uncovered containers such as oil drums or boxes that enable access of flies and rodents. |
| L | Unconfined litter - refuse and trash discarded without apparent attempt to confine. |
| B | Burning - evidence of trash disposal by burning in an incinerator, improvised metal container, or on the ground. |
| OT | Other type of storage - indicate type. |
| NO | Not observed - unable to determine method of refuse storage, if any. |

### Sewage Disposal

| | |
|---|---|
| P | Privy. |
| FP | Frost-proof toilet. |
| ID | Indoor plumbing - this cannot be determined conclusively without questions or inspection, but the presence of vent pipe and evidence of municipal water supply are indicative. |
| OS | Other - specify type. |
| NN | Not observed - unable to determine. |

### Conditions of Premises

| | |
|---|---|
| WK | Well-kept. Appearance of yard or lot indicates regular maintenance. |
| DO | Dilapidated outbuildings - sheds, barns, chicken coop, or other structures that are deteriorating. |
| LJ | Large items of junk - abandoned vehicles or other machines, refrigerators or other appliances, or other articles for which a truck would be needed to transport. Indicate type if identifiable. |

| | |
|---|---|
| OB | Office buildings. Indicate if specific purpose is obvious, such as: bank, court house, county office, city hall, etc. |
| PU | Public utilities. Area used by government or other organization for public services. Examples: power distribution sub-stations, air monitoring stations, refuse disposal sites, health department. Where practical, the specific use should be indicated on the form. |
| I | Institution. Indicate type such as school, church, college, hospital. |
| R | Recreational area. Any area designed for decorative or recreational purposes. Indicate type of use when apparent; for example, park, playground, golf course. |
| V | Vacant lot or area. If agricultural or pasture use, indicate by V-A. |
| ON | Other non-residential use. Indicate type. |

Multiple Use - indicates structures used for both residential and business purposes by combinations of symbols for residences and businesses. For example, a combination single-family residence and grocery store would be indicated R-1 - BO ; a combination single-family residence and beauty shop would be indicated R-1 - BN.

## Condition of Structure

| | |
|---|---|
| NW | New structure - obviously recently built or recently placed on location. |
| GR | Good repair - no apparent sign of neglect or deterioration. |
| MR | Needs minor repairs - no structural defects or hazards observed but some work needs to be done to prevent deterioration. For example, peeling paint, torn screens, broken window, etc. |
| ER | Needs extensive repairs - value of basic structure justifies cost of major repairs. For example, roof needs replacing and entire structure needs painting. |
| DL | Dilapidated - value of basic structure does not warrant cost of extensive repairs. |
| -V | Add to above symbols when structure is vacant. |

| | |
|---|---|
| OG | Overgrown weeds - the yard or lot is covered or partially so by uncontrolled growth of vegetation. |
| RH | Rodent harborage - rubble or other debris, unstacked lumber, or other material observed that could provide harborage for mice and rats. |
| SW | Standing water - indicate permanent or semi-permanent that could provide breeding places for mosquitoes. Do not record casual water resulting from recent rain unless the place of accumulation appears likely to persist. |
| ST | Septic tank overflow - usually can be identified by evidence of flow from beneath surface. |
| DC | Dogs or cats - indicate which or both by circling appropriate letter or both letters. Indicate number observed. |
| CH | Chickens or other domestic fowl - indicate number observed and whether in coop or loose by -C or -L. |
| HR | Horses - indicate number observed. |
| CO | Cows - indicate number observed. |
| PI | Pigs |
| GA | Goats |
| AP | Air pollution - any activities such as burning that are sources of air pollution. |
| OO | Other - any other objectional conditions observed. |

Table 4-3

Summary
Environmental Survey

Type of Land Use

Page_________of_______________

Community_____________________

State_________________________

Inspector_____________________

Sector_______________

| Block Number | Residential | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Single Residence | Double Residence | Multiple Residence* | | Motel * | | Hotel * | | Mobile Home | House Trailer | Other-Indicate Type | Total |
| | | | N | U | N | U | N | U | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
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| | | | | | | | | | | | | |

| Non-Residential | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Business Organic | Business Not Organic | Industry Organic | Industry Not Organic | Office Building | Public Utility | Institution | Recreational Area | Vacant Lot or Area | Other-Indicate Type | Total |
| | | | | | | | | | | |
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| Multiple Use | Total all Premises |
|---|---|
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| | |

*Enter number of structures (N) and number of units (U), if determined.

Table 4-4

Page____ of __________

Summary
Environmental Survey

Community__________

State__________

Physical Condition of Structure
and
Sanitary Condition of Premises

Sector__________

Inspector__________

| | Physical Condition Number of Structures | | | | | | Sanitary Condition Number of Premises | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Block Number | New | Good Repair | Minor Repairs | Extensive Repairs | Dilapidated | Vacant | Well Kept | Dilapidated Outbuildings | Large items of junk | Overgrown Weeds | Rodent Harborage | Standing Water | Septic Overflow | Dogs - Cats | Chickens | Horses | Cows | Air pollution sources | Other Objectionable |
| | | | | | | | | | | | | | | | | | | | |
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Page____ of______________

### Table 4-5

Inspector________________

Sector______________

### Summary
### Environmental Survey

Community_______________

State____________________

### Water Supply, Sewage Disposal, Solid Waste Storage

Number of Premises

| Block Number | Water Sources | | | | | Sewage Disposal | | | | | Solid Waste Storage | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Open Well | Well with Pump | Municipal Supply | Other - Type | Not Observed | Privy | Frost-proof Toilet | Indoor Plumbing | Other - Type | Not Observed | Satisfactory Container | Unsatisfactory Container | Unconfined Litter | Burning | Other - Type | Not Observed |
| | | | | | | | | | | | | | | | | |
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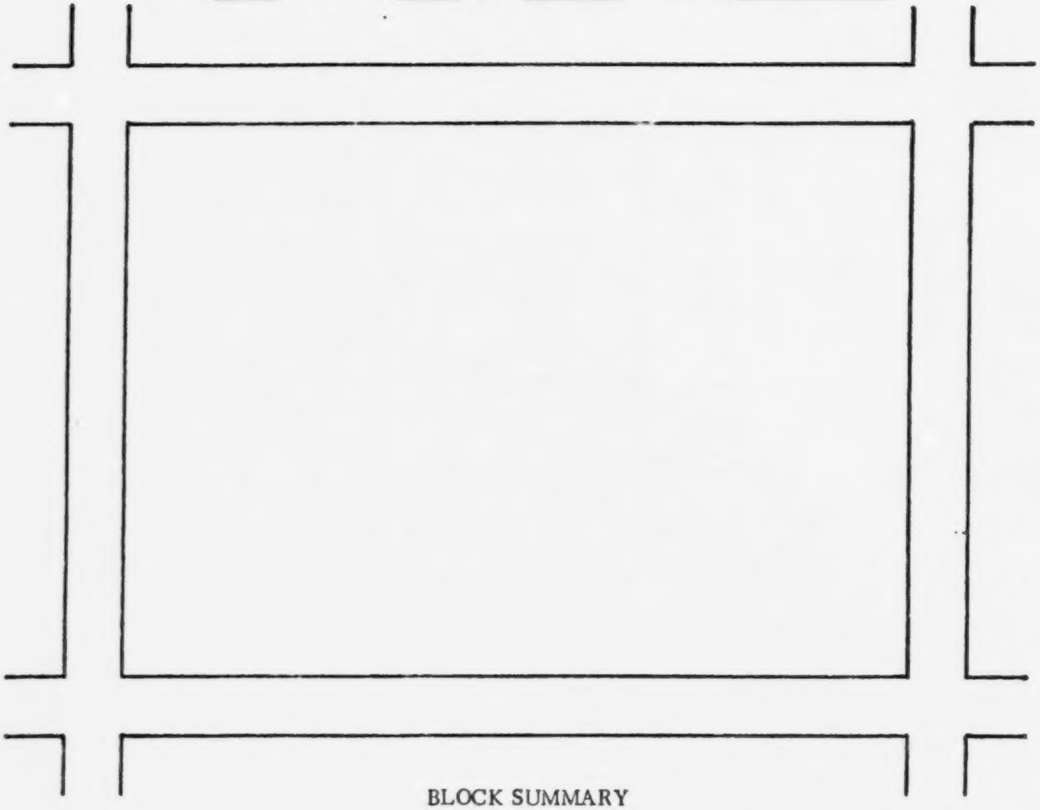
**Figure 4-1**

## Environmental Survey

Community__________________

Sector____ Block No.____ Date______ Inspector__________



BLOCK SUMMARY

| Residential | | | | | | | | | | | | Non-Residential | | | | | | | | | | | Multiple Use | Total All Premises |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Single Residence | Double Residence | Multiple Residence * | | Motel * | | Hotel * | | Mobile Home | House Trailer | Other-Indicate Type | Total | Business Organic | Business Not Organic | Industry Organic | Industry Not Organic | Office Building | Public Utility | Institution | Recreational Area | Vacant Lot or Area | Other-Indicate Type | Total | | |
| | | N | U | N | U | N | U | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |

| Physical Condition Number of Structures | | | | | | Sanitary Condition Number of Premises | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| New | Good Repair | Minor Repairs | Extensive Repairs | Dilapidated | Vacant | Well Kept | Dilapidated Outbuildings | Large items of junk | Overgrown Weeds | Rodent Harborage | Standing Water | Septic Overflow | Dogs - Cats | chickens, other foul | Horses | Cows, Pigs, Goats | Air pollution sources | Other Objectionable |
| | | | | | | | | | | | | | | | | | | |

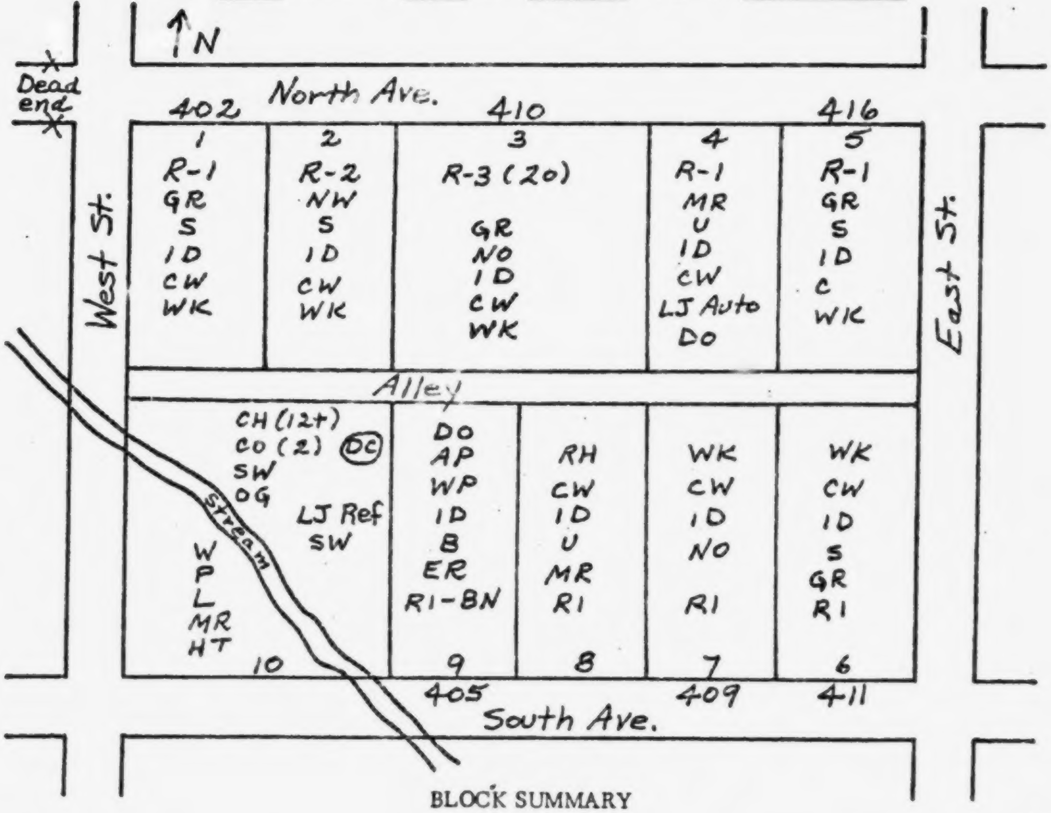
| Water Sources | | | | | Sewage Disposal | | | | | Solid Waste Storage | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Open Well | Well with Pump | Municipal Supply | Other - Type | Not Observed | Privy | Frost-proof Toilet | Indoor Plumbing | Other - Type | Not Observed | Satisfactory Container | Unsatisfactory Container | Unconfined Litter | Burning | Other - Type | Not Observed |
| | | | | | | | | | | | | | | | |

Figure 4-2

Environmental Survey

Community Coalville

Sector A Block No. 17 Date 8/18/76 Inspector C.N. Smith


N
Dead end
North Ave.
402
410
416
1
R-1
GR
S
1D
CW
WK
2
R-2
NW
S
1D
CW
WK
3
R-3 (20)
GR
NO
1D
CW
WK
4
R-1
MR
U
1D
CW
LJ Auto
DO
5
R-1
GR
S
1D
C
WK
West St.
East St.
Alley
CH (12+)
CO (2)
DC
SW
OG
LJ Ref
SW
Stream
W
P
L
MR
HT
DO
AP
WP
1D
B
ER
R1-BN
RH
CW
1D
U
MR
R1
WK
CW
1D
NO
R1
WK
CW
1D
S
GR
R1
10
9
8
7
6
405
409
411
South Ave.

BLOCK SUMMARY

| Residential | | | | | | | | | | | | Non-Residential | | | | | | | | | | | Multiple Use | Total All Premises |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Single Residence | Double Residence | Multiple Residence* | | Motel* | | Hotel* | | Mobile Home | House Trailer | Other-Indicate Type | Total | Business Organic | Business Not Organic | Industry Organic | Industry Not Organic | Office Building | Public Utility | Institution | Recreational Area | Vacant Lot or Area | Other-Indicate Type | Total | | |
| | | N | U | N | U | N | U | | | | | | | | | | | | | | | | | |
| 6 | 1 | 1 | 20 | | | | | | 1 | | 9 | | | | | | | | | | | | 1 | |

| Physical Condition Number of Structures | | | | | | Sanitary Condition Number of Premises | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| New | Good Repair | Minor Repairs | Extensive Repairs | Dilapidated | Vacant | Well Kept | Dilapidated Outbuildings | Large items of junk | Overgrown Weeds | Rodent Harborage | Standing Water | Septic Overflow | Dogs - Cats | Chickens | Horses | Cows | Air pollution sources | Other Objec-tionable |
| 2 | 4 | 3 | 1 | | 1 | 6 | 2 | 2 | 1 | 1 | 1 | | 1 | 1 | | 1 | | |

| Water Sources | | | | | Sewage Disposal | | | | | Solid Waste Storage | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Open Well | Well with Pump | Municipal Supply | Other - Type | Not Observed | Privy | Frost-proof Toilet | Indoor Plumbing | Other - Type | Not Observed | Satisfactory Container | Unsatisfactory Container | Unconfined Litter | Burning | Other - Type | Not Observed |
| 1 | 1 | 8 | | | 1 | | 8 | | 1 | 4 | 2 | 1 | 1 | | |

## 5. CURRENT STATUS OF HEALTH (HEALTH INDEX SURVEY)

Few communities will need to do a complete health survey. You may, however, wish to conduct a community needs survey or determine how aware the residents are of the health services available to them. In some communities, it may be desirable to find out where people go for health services and what type of health delivery systems they prefer. Where specific problems exist, such as disease outbreak or deficiencies in public health services, you may want to determine the extent of the problem and what is being done about it.

The survey forms and procedures outlined in this section were designed to be used selectively. You can choose those portions that are applicable to your purpose. You should discuss your needs with the health planners and decide what procedures would be best for your use.

The procedures outlined were devised for the particular purpose of evaluating health effects associated with energy developments, although they are applicable to general appraisal of health status. The survey was designed to secure the following type of information:

- Need and adequacy of health and sanitation services in the community.
- Environmental conditions that affect health.
- Extent of protection against diseases preventable by immunizations.
- Current and previous experience with diseases and injury.
- Sources of health services.

## Type of Survey

Information is obtained by a personal interview with an informed respondent, preferably the housewife, in each household from which information will be obtained. The interview should be conducted by a person specifically trained for the purpose. Current employees of health agencies, persons with experience in conducting interviews on other subjects, and interested volunteers are some of the candidates for training. The material provided here may be used for orientation and training interviewers.

## Seclection of Families for Interview

The information is obtained from an entire family or household unit. (A household unit is all persons residing permanently in a dwelling unit.) Members of the household may reside in a single-family dwelling or occupy one of several units in an apartment house. In any event, the information obtained relates to only the persons that comprise the family or household unit.

Information is desirable from all families in communities consisting of about 200 families or less. In larger communities, the resources and time available may necessitate sampling only a portion of the community. There are several procedures that may be used to identify a representative sample of respondents in the community. One that has proved useful in health surveys is "Attribute Sampling Methods for Local Health Departments", Public Health Services Publication No. 1230, available from the Government Printing Office.

Since the primary concerns here are health effects in rapidly growing communities, the health index survey may be confined to the recently developed portion of the community if absolutely necessary. This is, however, a poor alternative as the entire community is involved and only the extent of impact varies among different sections. Generally, the sample should be as large as circumstances permit -- preferably the entire community if 200 or fewer families are involved.

Arrangement of the Interview Form

The forms used for the Health Index Survey are illustrated in Figures 5-1, which consists of Pages 1 through 16. The series of form shown on Pages 1 through 14 is arranged for use on a clipboard to facilitate handling of the forms during the interview.

- Page 1 of Figure 5-1 provides for recording data that identifies the community, neighborhood, household, and interviewer. The data and time the survey was conducted, or attempted, and other data also are recorded on Page 1.
- Page 2 was designed to obtain impressions about the needs for health services in the community and the respondent's evaluation of the adequacy of existing efforts.
- Page 3 is arranged to determine the extent to which selected health and welfare services available in the community are used by the household members and which presently unavailable services would be used if they were accessible.
- Page 4 concerns the impressions about environmental conditions and community services that affect health.
- Page 5 provides for information on the protection that the family members have against diseases that are preventable by immunization, the tests they have had for certain diseases, and physical examinations they have had.
- Pages 6, 7, and 8 concern the family's experience with illness and injury.
- Pages 9 and 10 concern the sources of regular medical care

and places and reasons for health care in institutions.

- Pages 11 and 12 relates to information concerning habits and behavior that affect health of family members.
- Page 13 contains provisions for listing the names and ages of household members and recording other information about the family and the place of residence.
- Page 14 is for recording information regarding deaths of immediate family members.
- Page 15 and 16 are a separate list of questions relates to mental health. This is left with the respondent to complete after the interview and then mail to the interviewer or the organization conducting the survey.

Pages 1, 2, 3, 4, 13, and 14 are eight and one-half by fourteen inches and the remainder are eight and one-half by eleven inches. Any other convenient proportionate sizes can be used provided the names of household members listed on the roster on Page 13 is visible and properly aligned when overlain by Pages 5 through 12. The pages of the survey forms are stapled on the right hand margin.

## Suggestions for Conducting the Interview

A brief explanatory statement should be prepared for use by interviewers in each community. This should contain an explanation of the local sponsorship of the survey and its purpose. It should give a brief overview of what information will be requested. The respondents should be assured that all responses are confidential and that individuals and premises will not be identified in reports or otherwise. It should be emphasized that the survey is designed to gather statistical data that will be used to improve and develop health services for the community.

Page 1. Identification Data and Schedule of Interview. The identification data should be recorded on Page 1 of each series of

Figure 5-1

## HEALTH INDEX SURVEY

**Investigations of Health Effects Associated with Energy Development**

Record of Call Attempts

| Date | Time | Comments |
|---|---|---|
| 1. | AM<br>PM | |
| 2. | AM<br>PM | |
| 3. | AM<br>PM | |
| 4. | AM<br>PM | |

Record of Interview

| Time | | Date Completed | Comments |
|---|---|---|---|
| Began | Ended | | |
| AM<br>PM | AM<br>PM | | |

Non-Interview Reason

1 Vacant

2 Not at home

3 Refused

4 Other (SPECIFY) __________

Page 1

**Identification No.** __________

Interviewer __________

Community __________

Sample Number __________

Neighborhood __________

Household __________

1

**Office Use Only**

## RESPONDENT'S GENERAL IMPRESSIONS OF HEALTH AND SANITATION SERVICES

### Health Services

A. Some health services that are available in one town may not be available in another town, have you or anyone in your household ever needed a health service that was not available in this community?

1 Yes (If yes) What type of service was needed? ______
2 No

B. Are you satisfied with the variety of health services provided in this community at the present time or do you feel additional services are needed?

1 Satisfied now
2 Need additional services (Ask C)

C. What do you consider to be the most urgent needs for additional health services in this community?

a. ______ b. ______
c. ______ d. ______

### Sanitation Services

| | | | |
|---|---|---|---|
| What do you think could be done to make the entire community a more healthy and attractive place to live? | Who, if anyone, is doing anything about the community needs at the present time? | Do you think they are doing enough, or could additional work be done? (CIRCLE NO.) | What else should be done, who should do it? |
| a. | | 1. Doing enough now<br>2. Could do more | |
| b. | | 1. Doing enough now<br>2. Could do more | |
| c. | | 1. Doing enough now<br>2. Could do more | |
| d. | | 1. Doing enough now<br>2. Could do more | |
| What do you think could be done to make your own neighborhood a more healthy and attractive place to live? | Who, if anyone, is doing anything about your neighborhood needs at the present time? | Do you think they are doing enough, or could additional work be done? (CIRCLE NO.) | What else should be done, who should do it? |
| a. | | 1. Doing enough now<br>2. Could do more | |
| b. | | 1. Doing enough now<br>2. Could do more | |
| c. | | 1. Doing enough now<br>2. Could do more | |
| d. | | 1. Doing enough now<br>2. Could do more | |

## ANSWER CODES FOR USE ON PAGE 3

Reasons for Not Using Service

(1) Did not know about service

(2) Not needed

(3) Not convenient

(4) Did not like the service provided

(5) Other ____________________

____________________

## AWARENESS AND USE OF COMMUNITY HEALTH SERVICES

(Interviewer: Before the interview, check which services are actually available in the community.)

A. Which of the following health services do you know are available in this community? (READ ENTIRE LIST)

B. Which of the following health services in this community have ever been used by members of your family or other residents in your home? (READ AVAILABLE LIST)

C. Which of the following health services would your family or other residents in your home use now if they were available? (READ UNAVAILABLE LIST)

| Available | Type of Health Service | A |  |  | B |  |  | C |  |  |
|---|---|---|---|---|---|---|---|---|---|---|
|  |  | Yes | No | Don't Know | Yes | No (Code) | Don't Know | Yes | No (Code) | Don't Know |
|  | Immunization clinic |  |  |  |  |  |  |  |  |  |
|  | Prenatal clinic |  |  |  |  |  |  |  |  |  |
|  | Well-child clinic |  |  |  |  |  |  |  |  |  |
|  | Nutrition counseling service |  |  |  |  |  |  |  |  |  |
|  | Family planning service |  |  |  |  |  |  |  |  |  |
|  | Tuberculosis clinic |  |  |  |  |  |  |  |  |  |
|  | Venereal disease clinic |  |  |  |  |  |  |  |  |  |
|  | Mental health center |  |  |  |  |  |  |  |  |  |
|  | Cancer detection clinic |  |  |  |  |  |  |  |  |  |
|  | Program for physically handicapped |  |  |  |  |  |  |  |  |  |
|  | Alcoholics anonymous (or similar program) |  |  |  |  |  |  |  |  |  |
|  | Drug abuse |  |  |  |  |  |  |  |  |  |
|  | School lunch program |  |  |  |  |  |  |  |  |  |
|  | Programs for the elderly |  |  |  |  |  |  |  |  |  |
|  | Welfare services |  |  |  |  |  |  |  |  |  |

## IMPRESSIONS ABOUT ENVIRONMENTAL CONDITIONS AND COMMUNITY SERVICES THAT AFFECT HEALTH

### A. Indoor Conditions

Have you noticed or been bothered by any of the following things in or near your home in the past 12 months?

|  | Yes | No | Do not know or have not been bothered |
|---|---|---|---|
| Mosquitoes |  |  |  |
| Flies |  |  |  |
| Cockroaches |  |  |  |
| Other Insects (SPECIFY) |  |  |  |
| ____________ |  |  |  |
| ____________ |  |  |  |
| Mice |  |  |  |
| Rats |  |  |  |
| Other (SPECIFY) |  |  |  |
| ____________ |  |  |  |
| ____________ |  |  |  |

### B. Community Services

How would you rate the following community services, would you say__________was satisfactory or unsatisfactory?

| Type of Service | Satisfactory | Unsatisfactory | No Opinion |
|---|---|---|---|
| Trash collection |  |  |  |
| Garbage collection |  |  |  |
| Street lighting |  |  |  |
| Street maintenance |  |  |  |
| Police protection |  |  |  |
| Fire protection |  |  |  |
| Public transportation |  |  |  |
| Are there any other services that you would like to comment about?____________ |  |  |  |
|  |  |  |  |
| ____________ |  |  |  |
|  |  |  |  |

For the remaining questions I need to know the names of all the family members. (Also the names of other persons living in the household who are not members of the family.)

## ANSWER CODES FOR USE ON PAGE 5

### M-M-R

(1) Measles single
(2) Rubella single
(3) Mumps single
(4) M-R (measles-rubella)
(5) M-M-R (mumps-measles-rubella)
(6) Do not know

### Place of Service

(1) Private physician's office
(2) Health Department
(3) School
(4) Hospital
(5) Military
(6) X-Ray Mobile Van
(7) Other

## IMMUNIZATIONS, TESTS, PHYSICAL EXAMINATIONS

Has (READ NAME) been (Immunized for____, Tested for____, Had a Chest X-Ray or Physical Examination)?

| Polio Vaccine (No. of doses) | | DPT (Date) | TD or T (Date) | M-M-R Vaccine | | Other | Source of Immunization (Code) | T.B. Skin Test | | | Chest X-Ray | Physical Exam | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oral | Injection | | | (Code) | (Date) | Type Year | | (Date) | Results | Source (Code) | (Date) (Code) | Never | Date of Last | So (C |
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## ANSWER CODES FOR USE ON PAGE 6

### Frequent or Recurrent Problems

(1) Upper Respiratory Infection
(2) Pneumonia
(3) Cough
(4) Sore Throat
(5) Asthma or Allergy
(6) Diarrhea
(7) Stomach Ulcers
(8) Headaches
(9) Eye Irritation
(10) Ear Infections
(11) Fever Blisters
(12) Skin Rash
(13) Painful or Swollen Joints
(14) Kidney/Bladder Infections
(15) Dental Conditions
(16) Nervous or Emotional Problems
(17) Other Health Problems (not defined)

### Handicaps

(1) Birth Deformities
(2) Cerebral Palsy
(3) Hearing Trouble
(4) Missing fingers/arm
(5) Missing toes/leg
(6) Paralysis
(7) Permanent Stiffness
(8) Seeing Problems
(9) Speech Trouble

## FREQUENT OR RECURRENT PROBLEMS AND HANDICAPS

Does (NAME) have any frequent or recurring health problems or handicaps?

| FREQUENT OR RECURRENT PROBLEMS | | | | | | | | | | HANDICAPS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Code | Number of Episodes | | | Year of Onset | Code | Number of Episodes | | | Year of Onset | Code | Year of Onset | Code | Year of Onset |
| | Day | Week | Year | | | Day | Week | Year | | | | | |
| | | | | | | | | | | | | | |
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## ANSWER CODES FOR USE ON PAGE 7

### Previous Diseases

(1) Mumps
(2) Measles
(3) Rubella
(4) Whooping Cough
(5) Other

### Chronic Conditions

(6) Chronic cough
(7) Chest pain
(8) Shortness of breath
(9) Emphysema
(10) Asthma
(11) Bronchitis
(12) Tuberculosis

(13) Sinus Trouble
(14) Allergy (any)
(15) Skin Trouble

(16) Anemia
(17) High Blood Pressure
(18) Stroke
(19) Hardening of the arteries
(20) Heart Trouble
(21) Rheumatic Fever

(22) Stomach Trouble
(23) Stomach Ulcer
(24) Gallbladder/Liver Trouble
(25) Hepatitis (jaundice)

(26) Kidney Stones
(27) Prostate Trouble

(28) Hemorrhoids (Piles)
(29) Varicose Veins

(30) Thyroid Trouble
(31) Diabetes

(32) Arthritis/Rheumatism
(33) Back Trouble

(34) Convulsions (Epilepsy)
(35) Nervous Conditions

(36) Hernia
(37) Tumor or Cancer

(38) Other ____________________

____________________

____________________

## PREVIOUS DISEASES AND CHRONIC CONDITIONS

What chronic or acute disesase has (NAME) had? In what year was the onset of that disease?

| Code | Year of Onset | Code | Year of Onset | Code | Year of Onset | Code | Year of Onset | Code | Year of Onset | Code | Year of Onset |
|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |  |  |  |  |  |
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## ANSWER CODES FOR USE ON PAGE 8

### Place of Accident

(1) At home or adjacent premises
(2) Street and highway
(3) Farm
(4) Industry
(5) School
(6) Place of recreation and sports (except school)
(7) Other, including business, church, progessional office, etc.

ILLNESS WITHIN PREVIOUS TWO WEEKS OR INJURY WITHIN PREVIOUS YEAR

Has (NAME) been ill in the past 2 weeks or been injured in the past 12 months?

| Illness Name | Injury |  | Duration | Physician Consulted |  |  | Hospitalized |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|
|  | Name | Accident Place (Code) |  | Yes | No | Name | Yes | No | Where | How Lo |
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## ANSWER CODES FOR USE ON PAGE 9

### Reason for Physician Visit

(1) Diagnosis or Treatment
(2) Pre or Post-Natal Care
(3) General Check-Up
(4) Immunization or Vaccination
(5) Eye Examination (glasses)
(6) Other

### Reason for Dentist Visit

(1) Fillings
(2) Extractions or other surgery
(3) Straightening (Orthodontia)
(4) Treatment of gums
(5) Cleaning teeth
(6) Examination
(7) Denture work
(8) Other

### Location of Physician and Dentist

(1) Local private physician or dentist
(2) Private physician or dentist in another County
(3) Private physician or dentist out of state
(4) Military Medical Care
(5) V.A. Medical Care

## SOURCES OF RECENT MEDICAL CARE

Has (NAME) been to either a physician or a dentist in the past 12 months?

| VISIT TO PHYSICIAN | | | | VISIT TO DENTIST | | | |
|---|---|---|---|---|---|---|---|
| How Many Times | Date of Latest | Reason for Latest (Code) | Where (Code) | How Many Times | Date of Latest | Reason for Latest (Code) | Where (Code |
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## ANSWER CODES FOR USE ON PAGE 10

### Type of Facility

(1) Local Hospital
(2) V.A. Hospital
(3) Convalescent Hospital
(4) Nursing Home
(5) State Tuberculosis Sanatorium
(6) State Hospital
(7) Institution for Exceptional Children
(8) Other health related facility

### Outcome

(1) Recovered
(2) Improved
(3) No change
(4) Worsened

STAY IN HOSPITAL OR INSTITUTION IN THE PAST YEAR

Has (NAME) ever been a patient in a hospital or other health related institution within the past year?

| | | 1 | | | | 2 | | | |
|---|---|---|---|---|---|---|---|---|---|
| Never | Number of Times | Type of Facilities (Code) | Reason | Length of Stay | Outcome (Code) | Type of Facilities (Code) | Reason | Length of Stay | Outcome (Code) |
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# COPIES OF CARDS TO BE HANDED TO RESPONDENTS

Diet

(1) Has a proper diet
(2) Particular about eating, and does not eat properly
(3) Has frequent snacks between meals
(4) Frequently eats candy
(5) Drinks about______soft drinks a day
(6) Is on a diet prescribed by ____________________

because of ______________________________
(7) Other:
______________________________
______________________________

Smoking

(1) Never has smoked
(2) Smokes______packs of cigarettes a day
(3) Smokes a pipe or cigars
(4) Formerly smoked, but stopped____months ago
(5) Other______________________________
______________________________

## HABITS AND BEHAVIOR THAT AFFECT HEALTH

**DIET:** The statement on this card can be used to describe a person's eating habits. Which of these apply to (NAME)? (Code as many as apply.)

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
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**SMOKING:** This card describes various smoking habits. Which of these apply to (NAME)? (Code as many as apply.)

| 1 | 2 | 3 | 4 | 5 |
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## COPIES OF CARDS TO BE HANDED TO RESPONDENTS

Hazards (indicate at Home, School, or Work)

(1) Not exposed to unusual hazards
(2) Operates dangerous equipment at:(Home)(School)(Work)
______________________________
(3) Building at (Home)(School)(Work) ______________
is not safe because (Specify) ______________
______________________________
(4) Other hazards at (Home)(School)(Work) __________
______ are ______________________
______________________________

Indoor Environment (indicate at Home, School, Work)

(1) No adverse conditions
(2) Objectionable noise at (Home)(School)(Work)
______________________________
(3) Poor lighting at (Home)(School)(Work)
______________________________
(4) Objectionable odors at (Home)(School)(Work)
______________________________
(5) Objectionable dust at (Home)(School)(Work)
______________________________
(6) Eye irritation experienced at(Home)(School)(Work)
______________________________
(7) Difficult breathing experienced at (H) (S) (W)
______________________________
(8) Other objectionable conditions at (H) (S) (W)
______________________________
are ______________________________
______________________________

**HAZARDS:** This card describes the types of hazards that face some people. Which of these would apply to (NAME) and please complete the description. (Code as many as apply.)

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| | H S W | H S W | |
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**INDOOR ENVIRONMENT:** This card describes the various types of indoor conditions that face some people Which of these would apply to (NAME)? (Code as many as apply.)

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| | H S W | H S W | H S W | H S W | H S W | H S W | H S W |
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## ANSWER CODES FOR USE ON PAGE 13

### (A) Ethnic Group

(1) Caucasian
(2) Spanish-American
(3) Black
(4) Indian
(5) Oriental
(6) Other:__________
__________

### (B) Type of Dwelling Unit

(1) Separate house
(2) Duplex
(3) Single cottage apartment or garage apartment
(4) Apartment in multiple unit structure
(5) Mobile home
(6) Trailer
(7) Motor home
(8) Tent
(9) Other:__________
__________

### (C) Apparent Condition of Dwellin Unit

(1) New (occupied less than 1 year)
(2) Good condition
(3) Needs minor repairs (paint, clean-up, etc.)
(4) Needs extensive repairs (reroofing, broken brick work, broken windows, holes in walls)

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### D) Type of Heating in Home

(1) Central, warm air
(2) Steam or Hot Water
(3) Built-in electric (ceiling wall or baseboard)
(4) Floor or wall pipeless furnace
(5) Fireplace, stove, or portable room heater
(6) Other:__________
(7) None

### (E) Type of Cooling in Home

(1) Part of central heating system
(2) Separate central air conditioning
(3) Portable room air conditioning
(4) Other:__________
(5) None

### (F) Sewage Facilities

(1) City sewer
(2) Septic tank
(3) Cess pool
(4) Privy
(5) Unknown

### (G) Water Facilities

(1) Municipal (City)
(2) Private water com
(3) Private source
(4) Dug well
(5) Cistern

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### (H) Solid Waste Disposal

(1) Municipal collection
(2) Contract with private company
(3) Resident transport to disposal site
Where:__________
(4) Disposal on premises:
Burn____Bury____Other________
(5) Other:
__________

### (I) Education of Household Head

(1) Postgraduate Work
(2) College Graduate
(3) College 1-3 Years
(4) High School Graduate
(5) 10-11 Years
(6) 7-9 Years
(7) 0-6 Years
(8) Unknown

| Name | | | | Sex | | Relationship to Head of Household |
|---|---|---|---|---|---|---|
| First | Middle | Last* | Age | M | F | |
| 1. | | | | | | |
| 2. | | | | | | |
| 3. | | | | | | |
| 4. | | | | | | |
| 5. | | | | | | |
| 6. | | | | | | |
| 7. | | | | | | |
| 8. | | | | | | |
| 9. | | | | | | |
| 10. | | | | | | |

*Last name only if different from family name.

Family Name____________________

Address____________________

Phone No.____________________

Ethnic Group (observe) Code ☐ (A)

Residence:
Length of time in this community:_____years,_____months
Anticipated length of stay in this community: indefinitely_____or for__________
Length of time in this residence:_____years,_____months

Dwelling Unit:
Type of dwelling unit Code ☐ (B)
Number of rooms_____Number of rooms used only for bedrooms_____
Apparent condition of dwelling unit Code ☐ (C)
Type of space heating Code ☐ (D)
Type of space cooling Code ☐ (E)

Sanitary Facilities:
Type of sewage facilities Code ☐ (F)
Type of water facilities Code ☐ (G)
Type of solid waste disposal Code ☐ (H)

Dogs:
Number_____
Number vaccinated against rabies:_____

Employment:
Education of Household head Code ☐ (I)
Occupation of household head:____________________
Where employed:____________________

Respondent: Household Head_____ Spouse_____ Mature Child (18 or over)_____ Other (Specify) (18 or over)__________

## DEATHS OF MEMBERS OF IMMEDIATE FAMILY (INCLUDING STILLBIRTHS)

| Sex | Date of Death | Age at Death | Relation to Head of Household | Place of Death | Place of Residence | | Cause of Death |
|---|---|---|---|---|---|---|---|
| | | | | | State | County | |
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## THE MENTAL HEALTH QUESTIONNAIRE

You have given us a good deal of important general health information which the Health Department will find very helpful in their work of protecting the community's health. In addition, health is often related to how people live and the kind of problems they face. In order to know whether services should be provided to help out with these problems, and if so where, and how much, and what kinds of service, we must first have some information about the problems. Please answer the following questions, and feel free to ask the interviewer about any you don't understand.

Please do not sign this paper unless you want to. Place the paper in the provided envelope, seal the envelope and put it in the mail. Nobody will know what answers you gave to these questions because this paper is not identified in any way.

Check the line that you think best answers the question.

| Yes | No | Don't Know | |
|---|---|---|---|
| _____ | _____ | _____ | Has anyone in the household retired in the past two years, or will they in the next year?<br>How many? __________ |
| _____ | _____ | _____ | Are there any serious problems with raising the children?<br>How many "problem children"? __________ |
| _____ | _____ | _____ | Have any of the children dropped out of school in the past two years?<br>How many children dropped out? __________ |
| _____ | _____ | _____ | Have any of the children been in trouble with the law (juvenile court)?<br>How many have been? __________ |
| _____ | _____ | _____ | Has anyone else in the household been in trouble with the law (convicted) in the past two years?<br>How many? __________ |
| _____ | _____ | _____ | Do any members of the household drink excessively?<br>How many do? __________ |
| _____ | _____ | _____ | Has there been a divorce in the past two years? |
| _____ | _____ | _____ | Has there been one or more separations of the parents? |
| _____ | _____ | _____ | Do they ever threaten or discuss divorce or separation? |

| Yes | No | Don't Know | |
|---|---|---|---|
| _____ | _____ | _____ | Does any family member show behavior problems, such as using drugs, getting in trouble or being delinquent, running away from home or school, or being too agressive (fighting, beating wife or children, etc.)?<br>How many such members? __________ |
| _____ | _____ | _____ | Are there serious problems in the marriage? |
| _____ | _____ | _____ | Has any member of the household had psychiatric treatment or help for nervous or mental trouble in the past two years?<br>How many have? __________ |
| _____ | _____ | _____ | Has anyone from this household been admitted to a mental hospital in the past two years?<br>How many? __________ |
| _____ | _____ | _____ | Are there any mentally retarded members of the household?<br>How many? __________ |
| _____ | _____ | _____ | Has anyone from the home been admitted to a home for retarded children?<br>How many? __________ |
| _____ | _____ | _____ | Does anybody in the family wish for help - or wish that another family member would get help - for nervous or emotional trouble, worries, or for the way he acts sometimes?<br>How many should get help? __________ |
| _____ | _____ | _____ | Is the family on welfare? |
| _____ | _____ | _____ | Does the family get any other kind of financial assistance? |
| _____ | _____ | _____ | Is the head of the family unemployed?<br>For how long? __________ |
| _____ | _____ | _____ | Is anyone else in the household unemployed, who is of age and really should be working?<br>How many? __________ |

Please name the two greatest problems for you, or the family as a whole, or for other family members; those problem which you would most like to get taken care of.

1. ____________________________________________________________

2. ____________________________________________________________

Thank you very much for your help.

Health Index Survey forms before the forms are taken in the field to conduct interviews. A record should be made of each attempt to conduct an interview and the ultimate outcome of these efforts should be recorded.

Page 2. Informant's General Impressions of Health and Sanitation Services. The information requested on Page 2 of the Health Index Survey form is designed to obtain the informant's own impression about health and sanitation services in the community without specific or leading questions from the interviewer. The questions on Page 2 should be asked exactly as written but in a conversational manner rather than as a list of interrogations. The introduction and explanation can be continued to pose these questions but discussion of problems or conditions in the community prior to beginning the interview is not desirable. The interviewer should be completely neutral with regard to problems and conditions and neither agree or disagree about them. The respondent should not be able to anticipate the answers that the interviewer may expect.

Page 3. Awareness and Use of Community Health Services. The information from the questions on Page 3 will indicate the respondent's awareness of need and availability of some important health and social services in the community and whether or not the family uses them. Names of additional services may be added to this list as appropriate for specific communities.

Before undertaking the survey, it should be determined which of the services listed are available in the community. A check should be made in the "Available" column indicating these.

In conducting the interview, the respondent should be asked which of the entire list of services is known to be available. The entire list of services should be read without reference to the interviewer's knowledge of their availability. The respondent's answers should be recorded by placing a check in the appropriate column in area "A" of the form.

The respondent then should be asked which of the available services are used by any household member. The list of services identified by checks in the "Available" column should be read and the respondent's answer recorded for each in the "B" area of the form. If a "no" answer is given, inquiry should be made to determine why the service is not used. The response given should be recorded in the "No" column using the appropriate number from the code.

The respondent then should be asked whether or not the services on the list which are not presently provided in the community would be used if they were available. Read the entire list of services that were not previously checked as being available. Record the responses in the "C" area of the form. If a "no" answer is given, ask why the services would not be used. The response should be recorded in the "No" column using the appropriate code.

Page 4. Information About Indoor and Outdoor Environmental Conditions and Community Services That Affect Health. Information from the questions on Page 4 will give the informant's impression about selected environmental conditions and community services. The "A" list concerns nuisances that may occur in or near the dwelling unit. The "B" list concerns community services related to health and safety. Each one of the itmes should be mentioned separately and the answer recorded. After inquiring about the items on each list, the respondent should be given the opportunity to identify and comment about any other conditions or services. (After completing Page 4, the interviewer should tell the respondent that the interviewer will need to ask questions concerning individual members of the household. The interviewer should turn to Page 13 and ask the respondent to give the names of each member of household. Names of only those persons regarded as members of the "family" should be recorded. Names of either relatives or non-relatives, that are so regarded, should be listed but renters or boarders should not be. The family name, address, and phone number should first be obtained and recorded. The names, age, sex, and relationship of the individual household members then should be obtained and recorded. The first listed should be the head of the household, then the spouse, the children in order of age -- the oldest first, then relatives or other members. The remaining information on Page 13 should not be obtained until Page 12 is completed.)

Page 5. Immunizations, Tests, Physical Examinations. Knowledge of the number of persons protected against diseases preventable by immunization is useful for two primary purposes: (1) it provides an indication of the extent to which the entire population is protected against certain diseases, and (2) it is an indication of the availability and efficiency of health services in the community.

Except for the column for recording "TD or T" and "other", information should be obtained only for children under ten years of age. Usually the most reliable information on immunization is obtained from the mother. The interviewer should ask if she has records on immunization of the children and if she would get the data from them. If records are not available, the respondent should be asked to try to recall the year of each immunization for each child. Information in each column should be asked for specifically.

Polio vaccine - Only the date of the most recent immuni-nation should be recorded. Children usually receive oral polio vaccine. Immunization records may indicate "OTPV" (oral trivalent polio vaccine). If the type of vaccine is not recalled, the respondent should be asked if drops were placed in the child's mouth or on a sugar cube which was given to the child. If the answer is affirmative, the immunization should be recorded under "Oral." If the type cannot be determined, "?" should be recorded under "Oral."

DPT - (diptheria, pertussis, tetanus) Often identified as "baby shots." Only the year of the most recent immunization should be recorded.

TD or T - (tetanus-diptheria or tetanus) "TD" may be written also as "DT." Tetanus-diptheria usually is given to persons over five years of age. Tetanus may be given following an injury in which the skin is broken. Year of administration for both adults and children should be recorded.

Mumps, Measles, and Rubella - Vaccines for mumps, measles, and rubella may be given singly or in combination. Appropriate number from code should be used to identify single immuniation for mumps, measles, and rubella or for combinations of immunization. Measles is also called hard measles, 10-day measles, red measles, and rubeola. Rubella is also called German measles and 3-day measles. If "measles shots" are reported for a child, but the respondent doesn't know whether or not other immunizations were given in combination, this should be recorded as "(1) measles single."

Other - This column may be omitted except for special purposes, for example, a local epidemic for which immunization is available. However, the information should be recorded if the respondent volunteers it. There are only two principal "other" kinds: yellow fever and cholera. Persons who have traveled abroad may have received one or both. Smallpox should not be recorded since this immunization is no longer required or recommended in the United States.

Source of Immunization - The place where immunization was received should be recorded by entering the appropriate number from the code.

T.B. Skin Test - Information concerning skin test for tuberculosis, and chest x-ray in the next column, is needed to determine the extent to which the population has been exposed to tuberculosis. This information should be obtained for each member of the family. Results of skin test should be recorded as "pos" or "neg", "+" or "-" should not be used. If any family members are receiving medication because of a positive skin test, "M" also should be entered under "results." Source of the test should be indicated by entering the appropriate number from the code.

Chest X-Ray - A chest x-ray usually is made if the skin test is positive, and also may be made for other reasons. For example, many hospitals routinely make a chest x-ray on admission. Information for each family member that had a chest x-ray should be recorded using the code to indicate the place where x-ray was made.

Physical Examination - This information is needed to determine the proportion of the population that had a recent physical examination. Data should be recorded for each family member using the code to indicate where the examination was made.

Page 6. Frequent or Recurrent Problems or Handicaps. The information supplied on Page 6 indicates the experience of the family with respect to frequent or recurrent illnesses and handicaps. These data are helpful in determining what problems developed or occurred in the current place of residence and the experience of the family in other localities.

The respondent should be shown the list of frequent or recurring illnesses and asked about the family's experience with them. Each disease or condition should be mentioned individually. (This information indicates other health conditions of the family and the frequency of occurrence. The year of onset indicates whether or not the condition developed recently or is long-standing.) The code should be used to indicate the condition(s) identified by the respondent for each family member.

The respondent should then be asked how frequently the condition occurs. This might be reported as about twice a day, three times a week, or twice a year. The number given should be entered in the appropriate column under "Number of Episodes." The columns are ruled for recording two conditions for each household member, however, space is adequate for making additional entries if necessary.

The respondent should then be asked the year when the problem started and this should be entered under "Year of Onset."

For example, a report that a person has had a headache twice a day for the past year should be entered on the proper line for that family member as follows: 5 in the "(code)" column, 2 in the "Day" column, and 1975 in the "Year of Onset' column.

Page 7. Previous Diseases and Chronic Conditions. The information secured from answers to questions on Page 7 augments that which is on Page 5 and aids in evaluating the levels of immunizations in the community and availability of public health services.

The respondent should be shown the list of "Previous Diseases" and asked which household members have had any of those listed. Each disease should be mentioned individually. Any "other" reported should be recorded as "(5)" opposite the name of the proper person. The "other" should be identified under (5) in the list of "Previous Diseases" specified in the code. If "other" is reported for more than one household member, the members' numbers should be noted by the condition added under (5) in the code. For example, family member number 4 was reported to have had poliomyelitis and family member number 5 was reported to have had encephalitis. An entry of "5" should be made in the appropriate column for each member. Notations in the code should indicate: 4 - poliomyelitis, 5 - encephalitis. Information about "measles" should distinguish "measles" from "rubella" by entering an "M" or "R" in the "measles" column. The condition should be indicated by entering the appropriate number from the codes in the proper columns. The respondent should next be shown the list of chronic conditions. Each should be named individually, and inquiry made of experience of each household member. The code should be used to indicate conditions experienced by the various family members and the year of onset recorded in the appropriate columns.

Page 8. Illness in the Past Two Weeks or Injury in the Past Year. This information is useful in determining the current conditions of health in the family and how medical services are obtained when needed.

The respondent should be asked what illnesses have been experienced by the individual family members within the past two weeks. Each member should be mentioned by name. For example, ask, "Has __________(name) been ill during the last two weeks or injured during the last year?" If the answer is "yes" the respondent then should be asked what the illness was and the information recorded in the "Illness Name" column or the "Injury Name" column. The respondent then should be asked whether or not a physician was consulted, if so, the physician's name should be asked. Inquiry also should be made about hospitalization, as indicated on Page 8, and record the information in the "Hospitalized" column. The respondent also should be asked where the injury occurred and the code should be used to indicate the place in the "Accident Place" column.

Any additional pertinent information volunteered by the informant should be noted at the bottom of Page 8 or on the facing code sheet.

Information is sought only for the two previous weeks since experience has shown that minor illnesses that occurred before this time frequently are forgotten. If the informants tell you about an earlier illness or injury, make a note of this at the bottom of the page or on facing page but do not specifically ask about earlier illnesses or injuries.

Page 9. Sources of Regular Medical Care. The information on Page 9 is needed to determine the frequency with which medical and dental services are sought, for what reasons, and where these services are obtained. This information then is used to indicate what additional provisions should be made for these services and where they should be located.

To obtain the information for the "Frequency" columns, the respondent should be asked how many times within the last year each family member visited a physician or dentist. Each family member should be mentioned by name. The number reported should be recorded in the "How Many Times" column.

The respondent should then be asked the date of the most recent visit of each family member and the date reported should be recorded in the "Date of Latest" column. A list should not be displayed, just the reason should be recorded as reported.

The location where the service was received should be entered in the "where" column using the code for "Location of Physician and Dentist."

Page 10. Stay in Hospital or Institution in the Past Year. The information obtained from the questions on Page 10 indicates the frequency and purpose for use of selected health-related institutions. Where combined with data from other sources, for example those obtained from Page 9, the information is useful in planning the appropriate type and location of facilities to meet the needs of the community.

Information is recorded for each current member of the family. Information should not be recorded for members who have died. Inquiry should be made for each member by name and the number of times during the past year that each person was in a health-related institution should be recorded in the "Number of Times" column.

The codes should be used to identify the type of facility, the reason for admission, length of stay, and outcome. The appropriate number should be recorded in the proper column. Length of stay should be recorded in days. If a family member is a permanent occupant of an institution or a long-term occupancy is anticipated, "L" should be entered in the "Length of Stay" column. Space is provided for complete recording of two episodes. If more than two occurred during the year, complete data should be recorded only for the two most recent ones.

Page 11 and 12. Habits and Behavior. The information obtained by the questions on Page 11 and Page 12 relates to the possible occurrence of health hazards and to some of the habits of family members that affect health. All of these questions are concerned with prevention of adverse health conditions. This information is requested near the end of the interview since by the time this point is reached, good rapport should be established between the respondent and the interviewer.

Some of the questions pertain primarily to adults and others to children. The interviewer should mention the appropriate family members by name in each group as the card is displayed pertaining to each set of questions.

> Diet - Pertains generally to all members, but specific inquiries should be made concerning children, especially consumption of candy and soft drinks.
>
> Smoking - Concerns teenage and adults.
>
> Hazards - Applies to everyone. Specific inquiries should be made about schools and places of work.
>
> Indoor Environment - Also applies to everyone. Specific inquiries should be made about schools and places of work.

Conditions should be indicated in the proper columns by selecting appropriate numbers from each of the corresponding codes.

Space is provided on Page 11 and Page 12 for entering data in the columns. Note that some items in the codes on Page 11 and Page 12 have blank spaces. Appropriate data are to be recorded in the columns on the forms. If, on Page 11, an item in the code without a blank space is applicable, make a check mark in the column with the corresponding number. If an item with a blank space is applicable, enter the appropriate information in the column corresponding with that number. On completing the forms on Page 12, circle H, S, or W as appropriate and write the information for the blanks in the corresponding columns.

Page 13. Family and Environmental Information. Page 13 pertains to condition of the residence where the family lives and to general information about the family. (Information concerning the household roster was provided following description of Page 4.) Since planning for health and environmental services requires data on the number of people that will use them, it is necessary to determine how many people are currently living in the community and how long they plan to remain. Answers to the questions about occupation place of employment are helpful in this connection when the respondent is not certain about the future plans for the family.

Information concerning type and condition of the dwelling unit is needed to anticipate the futre requirements for housing and the necessity of repair and replacement. Data pertaining to source of domestic water, sewage disposal, and solid waste storage are necessary to project needs for community environmental surveys.

The interviewers should, in their own words, explain to the respondent why the information requested by the questions on Page 13 is important for evaluating the health and sanitary conditions of the community.

In completing Page 13 information should first be obtained concerning length of residence and anticipated length of stay in the community. The type of dwelling unit and the ethnic group usually can be determined by observation. Inquiry should be made to determine the number of rooms in the dwelling and the number of rooms used only as bedrooms.

The remaining information should be obtained by direct questions to the respondent. The appropriate number from the codes should be entered in the corresponding spaces.

Page 14. Deaths of Immediate Family Members (Including Stillbirths). Information concerning causes of death is useful in characterizing significant health problems of the population.

The information requested for Page 14 is not related to the household roster. Names should not be entered on Page 14, only the information indicated in the column headings.

The immediate family includes the spouses, their children (natural or adopted), and any other relatives who lived in the same dwelling with the current family members.

If a stillbirth is reported "S" should be entered in the "Age of Death" column. If the cause of stillbirth is reported, the information should be indicated in "Cause of Death" column. For example, "cord around neck," "mother had rubella," or "mother had diabetes." If the cause is not known, "UNK" should be recorded.

If the age at death was less than one year, age should be indicated in months in the "Age at Death" column. For example, "5 months."

## Mental Health Information

The Mental Health Questionnaire (Figure 5-1, Pages 15 and 16) is designed to obtain information concerning stressful situations that may affect the health and social well-being of the family. The questions are very personal and many people are reluctant to discuss them with anyone. Answers to them are necessary, however, to plan the types of health and social services that will meet the needs of citizens in the community.

The interviewer should carefully explain to the respondent the importance of obtaining the information. The fact that no one can identify the family that provides the data or the place where they live should be emphasized. Neither the questionnaire nor the envelope provided is marked in a way to enable anyone to know the source of information.

The interviewer should request the respondent to read the form through and ask about any questions that are not clear. An addressed, stamped envelope should be left with the respondent to return the completed form by mail to the interviewing agency.

## Filing Completed Survey Forms

A filing system should be established for the orderly accumulation and storage of completed survey forms. Individual folders should be provided for each block or neighborhood (or sector) using the identification notations, if available, developed for the environmental survey. The exact method of filing will depend on the sampling units employed. As a general guideline, the system used should permit consolidation of information as interviews are completed in a defined geographic area, a block or neighborhood for example. The completed forms should be filed each day. When the survey has been completed in an area, information should be consolidated as described below. The sets of survey forms should be numbered consecutively to provide control of the record.

## Compilation and Analysis of Data

The forms used for the Health Index Survey were so designed that the data collected could be consolidated by hand tabulation. The arrangement of the forms does permit, however, easy adaptation to mechanical handling if the necessary resources are available and the volume of data warrants machine processing. In commuities where the latter methods will be employed, the requisite specialists will be available for adapting the forms and processing procedures to the locally available system and equipment. The suggestions provided here anticipate hand tabulation and the use of a conventional adding machine or office calculator.

Consolidation of data should be done as surveys are completed for previously defined areas. Generally, this will be done for each block and the resulting data aggregated for the neighborhoods or sectors that were delineated in selecting the sample for surveying. Compilation of data by block provides flexibility in aggregating information by various combinations of block according to the homogeneity of the environmental and other variable to be compared with health information.

Before considering procedures for consolidation of data, attention must be given to the form in which data are desired and the means of extracting and transcribing them from the survey forms.

## Transcription of Data

Columnar analysis forms, available in pads from office supply outlets, should be used to record data transcribed from the survey forms. This usually is done more efficiently by two people working together, one reading from the survey form and the other recording on the analysis form. Data from the survey form is recorded for each interview on the same horizontal line on each of the analysis forms. The corresponding line on each of the analysis forms is identified with the same identification number. Entries of data on the analysis form is made by a single vertical mark in the appropriate column. Data from the entire set of forms a household interview should be recorded before work is commenced on another set of forms. When data from all interviews in a block are completed, the number of marks in each column is totaled and entered. Information concerning each block is extended on a summary sheet for the neighborhood or sector depending on how the means of aggregation was planned.

## Extracting Data from Survey Forms

The survey forms were designed to secure data in detail for individual factors, such as diseases and conditions, rather than for groups of factors. In the initial extraction of data from the survey forms, however, related factors often should be grouped. This is determined by the relative frequency with which specific diseases occur and the problems and needs of the community. Before designing the layout for data to be transcribed, the completed survey forms should be reviewed to determine the specific items of data and the extent of detail to be extracted.

## Tabular Compilations

Developing information from the data recorded on the survey forms requires, first, preparation of a series of tables summarizing the data and, second, analyses and interpretations of the data.

Both provide the content for a report of findings from the survey.

The following are examples of the types of tables required:

- Characteristics of the survey sample
  - Distribution of the sample by neighborhood or sector, number and percent of blocks surveyed, number and percent of interviews completed. (See Table 5-2.)
- Populations impression of health and sanitation services
  - Reported priorities of health and sanitation needs by neighborhood or sector.
  - Awareness and use of available public health services by neighborhood or sector.
- Extent of use of preventive health services
  - Number and percent of persons reported having a skin test for tuberculosis by neighborhood or sector, by age.
  - Number and percent of persons reporting a visit to a physician or dentist by neighborhood or sector, by age.
  - Number and percent of persons reporting immunization against communicable diseases by type of disease, by age, by neighborhood or sector.
- Experience with disease and injury
  - Number of recent illnesses reported by neighborhood or sector, by age.
  - Number of recent accidents reported by type of accident, by place of occurrence, by age, by neighborhood or sector.
  - Number and type of frequent or recurrent health problems by neighborhood or sector, by age.
  - Number of reported respiratory diseases by neighborhood or sector, by type of disease, by occupation, by length of exposure.

## Design of Tables

The form of the Health Index Survey suggests some possible formats for organization of tables. Table 5-3 through Table 5-6 indicate representative types suitable for presenting these data. Selected reports from the accompanying list of references should also be examined for ideas concerning forms of presentations, as should the vital statistics summary prepared by the state department of health.

After a preliminary decision is reached concerning the layout of the tables, procedures for transcribing data from the Health Index Survey form should be developed. Obviously the table format and procedures for transcription should be developed to accommodate all data, for which a need can be foreseen, from the survey form before transcription is begun. In this way inconsistencies and redundancies between the tables can be detected and adjusted.

## Table 5-1

## Health Index Survey

______________________
(Community)

## Distribution of Population Interviewed

| Sector or Socioeconomic Areas | Number of Blocks | | Percent of Blocks Surveyed | Number of Interviews | | Percent of Interviews Completed |
|---|---|---|---|---|---|---|
| | Total | Surveyed | | Possible | Completed | |
| Established Areas | | | | | | |
| New Housing Areas | | | | | | |
| Mobile Home Areas | | | | | | |
| Temporary Housing Areas | | | | | | |
| All Areas | | | | | | |
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## Table 5-2

## Health Index Survey

________________________
(Community)

## Age Composition of Population Surveyed

| Sector | Number of Households | Number of Persons in Age Groups (Age in Years) | | | | | | | | Persons per Household |
|---|---|---|---|---|---|---|---|---|---|---|
| | | >1 | 1-4 | 5-14 | 15-24 | 25-39 | 40-64 | 65+ | All ages | |
| | | | | | | | | | | |
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## Table 5-3

## Health Index Survey

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(Community)

Proportion of Persons Under 5 Years of Age Immunized

| Sector | Number of Persons | Percent Immunized | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Polio | Diphtheria | Pertussis | Tetanus | Mumps | Measles | Rubella |
| | | | | | | | | |
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Table 5-4

Health Index Survey

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( Community)

Occurrence of Chronic Diseases

| Sector | Number of Persons | Percent of Persons With Chronic Disease | | | | |
|---|---|---|---|---|---|---|
| | | Allergy | Asthma | Bronchitis | Emphysema | Any Chronic Disease |
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Table 5-5

Health Index Survey

(Community)

Occurrence of Recent Illness

| Sector | Number of Persons | Percent of Persons Ill Within 2 Previous Weeks | | | | | |
|---|---|---|---|---|---|---|---|
| | | Upper Respiratory Infection | Cough | Asthma or Allergy | Diarrhea | Eye Irritation | Any Illness |
| | | | | | | | |
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## Table 5-6

## Health Index Survey

______________________
(Community)

## Occurrence of Problems Related to Mental Health

| Sector | Number of Households | Percent of Households Where Problem Was Reported | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Problem Children | Legal Difficulties | Alcohol | Drugs | Emotional Difficulties | Financial Difficulties | Unem-ployment | Any Stressful Situation |
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## 6. RESOURCES FOR HEALTH SERVICES (INVENTORY OF PERSONNEL AND FACILITIES)

This section describes procedures for preparing a community inventory of personnel and facilities available to provide various types of health services. Such information is necessary to determine the adequacy of existing resources to meet the needs for health services defined by the procedures outlined in this manual and to assist in planning for additional resources where necessary. Tables 6-1 through 6-6 illustrate the forms recommended for summarizing essential data.

Before undertaking collection of these data you should discuss your needs with the Health Systems Agency for your area (see Appendix). Some of the data you need may be readily available and the Health Systems Agency can assist you with the inventory.

### Conducting the Inventory

The first step in developing the inventory of resources for health services is to determine where health services are available for residents of the community. The location of sources of health services, other than those in the community being evaluated, should be listed on the form shown in Table 6-1 together with the information concerning population, distance, and accessibility. All communities where health services are available within an average driving time of 20 minutes should be listed first. Other communities where health services are secured by a majority of residents in the community being evaluated should then be listed in order of increasing driving time. These communities will generally be within 90 minutes average driving time of the community being evaluated. If, however, the only services available are at a greater distance, their location should be listed. Sources of highly specialized and seldom used services should not be listed if they are at distances that require more than 90 minutes average driving time.

Resources for health services available in the community being evaluated and those available in the communities listed in Table 6-1 should be summarized in Tables 6-2 through 6-6. Data for the community being evaluated should be entered in the first column. Data for the remaining communities should then be provided in the following columns in order of increasing driving time.

## Arrangement of Forms

The form for recording the number of and location of personnel is shown in Table 6-2. Provision is made for identifying the possible sources of health services for residents of the community, indicating the accessibility in terms of average driving time, and tabulating the number of the health service providers according to their profession. The specialization of physicians should be determined when more than five are located in a community. The form shown in Table 6-3 should be used for this purpose.

Similar form should be used for summarizing information concerning facilities where health services are provided. The form illustrated in Table 6-4 should be used to indicate the number of facilities, by type, in the community being evaluated, and also the communities listed in Table 6-1. The form illustrated in Table 6-5 should be used to provide detailed information concerning capacity, types of services, and extent of use of available hospitals. Table 6-6 should be used for similar data relating to nursing homes.

## Sources of Information

Essentially all of the data needed for the health resources inventory are readily available. Information should first be sought from your Health Systems Agency and the State Health Planning and Development Agency (see Appendix). Most states, and many local agencies, have conducted health manpower surveys that provide data concerning personnel. State plans for health facilities usually are prepared annually to determine adequacy and projected needs for health facilities in designated service areas. These reports provide information relating to estimated population projections, current capacity and extent of use of various types of health facilities, and other factors that can be extracted directly for the inventory.

State and local professional societies and state licensing boards can provide data concerning the number and location of practitioners for which licenses are required. The state and county departments can provide information relating to public health personnel and probably other health personnel.

Information relating to hospitals can be obtained directly from "Guides to the Health Care Field" published annually by the American Hospital Association. Most hospitals have a copy, referred to as the "Guide Issue," which should be available for use. The data concerning hospitals in Table 6-4 and all of the data in Table 6-5 can be obtained from the "Guide Issue."

After data are obtained from the sources indicated, rough drafts of Tables 6-1 through 6-6 should be prepared. The appropriate professional associations and institutions should be requested to check them for accuracy and incorporate any changes since the source data were collected.

Table 6-1

## Inventory of Resources for Health Services

____________________
(community)

Name, Population, Distance, and Accessibility of Communities Where Health Services Are Available

| Community (Name) | Population | | Distance (miles) | Driving Time (minutes) | |
|---|---|---|---|---|---|
| | 1970 | 1975 | | Minimum | Maximum |
| | | | | | |
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## Table 6-2

## Inventory of Resources for Health Services

____________________
(community)

### Number and Types of Personnel Available for Health Services

|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Name of Community |  |  |  |  |  |  |  |  |
| Average Driving Time (minutes) | X |  |  |  |  |  |  |  |
| Profession | Number |  |  |  |  |  |  |  |
| M.D. |  |  |  |  |  |  |  |  |
| D.O. |  |  |  |  |  |  |  |  |
| Dentist |  |  |  |  |  |  |  |  |
| Nurse Practitioner |  |  |  |  |  |  |  |  |
| Physician's Assistant |  |  |  |  |  |  |  |  |
| Registered Nurse |  |  |  |  |  |  |  |  |
| Licensed Practical Nurse |  |  |  |  |  |  |  |  |
| Nurse's Aid |  |  |  |  |  |  |  |  |
| Public Health Nurse |  |  |  |  |  |  |  |  |
| Emergency Medical Technician |  |  |  |  |  |  |  |  |
| Pharmacist |  |  |  |  |  |  |  |  |
| Optometrist |  |  |  |  |  |  |  |  |
| Podiatrist |  |  |  |  |  |  |  |  |
| Physical Therapist |  |  |  |  |  |  |  |  |
| Other (specify) ____________ |  |  |  |  |  |  |  |  |
| Other (specify) ____________ |  |  |  |  |  |  |  |  |

Table 6-3

## Inventory of Resources for Health Services

____________________
(Community)

Number and Type of Medical Specialists in Accessible Communities with More Than Five Practitioners

| Name of Community | Average Driving Time | General Practice | | Family Practice | | Internal Medicine | | Obstetrics and Gynecology | | Pediatrics | | Surgery, General | | Other (Code) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MD | DO | MD | DO | MD | DO | MD | DO | MD | DO | MD | DO | MD | DO | MD | DO | MD | D |
| | | | | | | | | | | | | | | | | | | | |
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### Fields of Practice

1. Administrative Medicine
2. Aerospace Medicine
3. Allergy
4. Anesthesiology
5. Broncho-Esophagology
6. Cardiovascular Diseases
7. Dermatology
8. Diabetes
9. Endocrinology
10. Gastroenterology
11. General Preventive Medicine
12. Geriatrics
13. Hematology
14. Hypnosis
15. Infectious Diseases
16. Laryngology
17. Legal Medicine
18. Neoplastic Diseases
19. Nephrology
20. Neurology
21. Neurology, Child
22. Nuclear Medicine
23. Nutrition
24. Occupational Medicine
25. Ophthalmology
26. Otoloty
27. Otorhinolaryngology
28. Pathology
29. Pathology, Clinical
30. Pathology, Forensic
31. Pediatrics, Allergy
32. Pediatrics, Cardiology
33. Pharmacology, Clinical
34. Physical Med. & Rehabilitation
35. Psychiatry
36. Psychiatry, Child
37. Psychoanalysis
38. Psychosomatic Medicine
39. Public Health
40. Pulmonary Diseases
41. Radiology
42. Radiology, Diagnostic
43. Radiology, Pediatric
44. Radiology, Therapeutic
45. Rheumatology
46. Rhinology
47. Surgery, Abdominal
48. Surgery, Cardiovascular
49. Surgery, Colon and Rectal
50. Surgery, Hand
51. Surgery, Head and Neck
52. Surgery, Neurological
53. Surgery, Orthopedic
54. Surgery, Pediatric
55. Surgery, Plastic
56. Surgery, Thoracic
57. Surgery, Traumatic
58. Surgery, Urological

Table 6-4

**Inventory of Resources for Health Services**

____________________
(community)

Number of Types of Facilities Available for Health Services

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Name of Community | | | | | | | | |
| Average Driving Time (minutes) | | | | | | | | |
| Type of Facility | Number | | | | | | | |
| Hospital Number | | | | | | | | |
| Hospital No. of Beds | | | | | | | | |
| Infirmary | | | | | | | | |
| Diagnostic and Treatment Center | | | | | | | | |
| Outpatient Survival Facility | | | | | | | | |
| Outpatient Medical Facility | | | | | | | | |
| First Aid Station | | | | | | | | |
| Nursing Home Number | | | | | | | | |
| Nursing Home No. of Beds | | | | | | | | |
| Physician's Office | | | | | | | | |
| Dentist's Office | | | | | | | | |
| Nurse Practitioner's Office | | | | | | | | |
| Physician's Assistant's Office | | | | | | | | |
| Health Department | | | | | | | | |
| School Health Office | | | | | | | | |
| Drug Store | | | | | | | | |
| Other (specify) __________ | | | | | | | | |

# HOSPITAL CODES

(For Use With Table 6-5)

## FACILITIES

1 - Postoperative recovery room
2 - Intensive cardiac care unit
3 - Intensive care unit
4 - Open-heart surgery facilities
5 - Pharmacy with FT registered pharmacist
6 - Pharmacy with PT registered pharmacist
7 - X-ray therapy
8 - Cobalt therapy
9 - Radium therapy
10 - Diagnostic radioisotope facility
11 - Therapeutic radioisotope facility
12 - Histopathology laboratory
13 - Organ bank
14 - Blood bank
15 - Electroencephalography
16 - Inhalation therapy department
17 - Premature nursery
18 - Self-care unit
19 - Extended care or long-term nursing care unit
20 - Inpatient renal dialysis
21 - Outpatient renal dialysis
22 - Burn care unit
23 - Physical therapy department
24 - Occupational therapy department
25 - Rehabilitation inpatient unit
26 - Rehabilitation outpatient unit
27 - Psychiatric inpatient unit
28 - Psychiatric outpatient unit
29 - Psychiatric partial hospitalization program
30 - Psychiatric emergency services
31 - Psychiatric foster and/or home care
32 - Psychiatric consultation and education services
33 - Clinical psychologist services
34 - Organized outpatient department
35 - Emergency department
36 - Social work department
37 - Family planning service
38 - Genetic counseling service
39 - Abortion service (inpatient)
40 - Abortion service (outpatient)
41 - Home care department
42 - Dental services
43 - Podiatrist services
44 - Speech therapist services
45 - Hospital auxiliary
46 - Volunteer services department

## CONTROL

Government, nonfederal
12 - State
13 - County
14 - City
15 - City-county
16 - Hospital district or authority

Nongovernment not-for-profit
21 - Church operated
23 - Other

Investor-owned (for profit)
31 - Individual
32 - Partnership
33 - Corporation

Government, federal
41 - Air Force
42 - Army
43 - Navy
44 - Public Health Service other than 47
45 - Veterans Administration
46 - Federal other than 41-45, 47-48
47 - Public Health Service Indian Service
48 - Department of Justice

Osteopathic
61 - Church operated
63 - Other not-for-profit
64 - Other
71 - Individual for-profit
72 - Partnership for-profit
73 - Corporation for-profit

## SERVICE

10 - General medical and surgical
11 - Hospital unit of an institution (prison hospital, college infirmary, etc.)
12 - Hospital unit within a mental retardation school
22 - Psychiatric
33 - Tuberculosis and other respiratory diseases
42 - Narcotic addiction
44 - Maternity
45 - Eye, ear nose, and throat
46 - Rehabilitation
47 - Orthopedic
48 - Chronic disease
49 - Other specialty*
50 - Children's general
51 - Children's hospital unit of an institution
52 - Children's psychiatric
53 - Children's tuberculosis and other respiratory diseases
55 - Children's eye, ear, nose, and throat
56 - Children's rehabilitation
57 - Children's orthopedic
58 - Children's chronic disease
59 - Children's other specialty*
62 - Institution for mental retardation
82 - Alcoholism

*When a hospital restricts its service to a specialty not defined by a specific code, it is coded 49 (59 if a children's hospital) and the specialty is indicated in parentheses following the name of the hospital.

## STAY

S - Short-term -- average length of stay for all patients is less than 30 days or over 50 percent of all patients are admitted to units where average length of stay is less than 30 days.
L - Long-term -- average length of stay for all patients is 30 days or more or over 50 percent of all patients are admitted to units where average length of stay is 30 days or more.

Codes from:

American Hospital Association
"Guide to the Health Care Field"
1975 Edition

American Hospital Association
840 North Lake Shore Drive
Chicago, Illinois 60611

Table 6-5

Inventory of Resources for Health Services

__________________________
(Community)

Number, Types, Capacity, and Occupancy of Accessible Hospitals

| Community | Name of Hospital | Facilities (Code) | Classification (Code) | | | Inpatient Days (Code) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Control | Service | Stay | Beds | Admis-sions | Census | Occupan-cy (%) | Bassinets | Births | Personnel |
| | | | | | | | | | | | | |
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# HOSPITAL CONTROL CODES

## Government, nonfederal

12 - State
13 - County
14 - City
15 - City-county
16 - Hospital district or authority

## Nongovernment not-for-profit

21 - Church operated
23 - Other

## Investor-owned (for profit)

31 - Individual
32 - Partnership
33 - Corporation

## Government, Federal

41 - Air Force
42 - Army
43 - Navy
44 - Public Health Service other than 47
45 - Veterans Administration
46 - Federal other than 41-45, 47-48
47 - Public Health Service Indian Service
48 - Department of Justice

## Osteopathic

61 - Church operated
63 - Other not-for-profit
64 - Other
71 - Individual for-profit
72 - Partnership for-profit
73 - Corporation for-profit

Table 6-6

## Inventory of Resources for Health Services

______________________________
(Community)

Number, Capacity, and Occupancy of Accessible Nursing Homes

| Community | Name of Nursing Home | Control (Code) | Beds | Admissions | Census | Occupancy (percent) |
|---|---|---|---|---|---|---|
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# APPLICATIONS OF INFORMATION

The information obtained by the methods outlined in the previous sections will enable you to identify health problems and develop plans to prevent, alleviate, or eliminate them. Because needs are obvious, or appear so, in many instances questions may be raised as to the necessity of more precise quantitation or identification of underlying problems and remedial measures. There are, however, substantial reasons for making the evaluations by the procedures outlined. In addition to providing accurate, up to date information, this process enables the orderly development of priorities and also supplies the data required to obtain support from various granting agencies where such assistance is needed. Underlying health problems may be apparent -- in addition to other ways -- because of the overt occurrence of disease, recognized deficiencies in the scope or adequacy of available health services, insufficient personnel to provide health services, and the inadequacy of health facilities, or by combinations of these. Data compliled or collected by the procedures described and consolidated, analyzed, and interpreted indicate and quantify such problems. The brief explanation and examples provided below suggest some applications of data resulting from the evaluation described.

## OCCURRENCE OF DISEASE

The health index survey, as well as data from state and local reports and other sources, will reveal and to some extent quantify the occurrence of clinical illness. Comparison of the incidence of specific diseases, or health indicators, in various sectors of the community will enable you to define specific geopgraphic location where occurrence is excessive, that is, above average or expected rates for the community or area. Similar comparisons among communities or comparisons with county, state, or regional rates will indicate the relative severity of diseases or other problems in the various communities. The areas where specific disease problems are identified should then be evaluated to define the associated environmental, behavioral, or other factors. For most of the diseases considered in this evaluation, the etiology and epidemiology are well known. The majority of analyses involve quantitation, definition, and description of local circumstances and conditions rather than exploratory research.

For example, if an excessive rate of acute respiratory infections reported as common colds was detected in an area, environment data would be examined to ascertain if poor housing, inadequate heating, ambient toxins, or other factors were positively correlated with the reports of clinical illness. Such a correlation leads, of course, to definition of possible remedial measures that may involve physical alternation of dwelling units.

Another example illustrates the indication for a different type of remedial effort. Consider, for instance, the detection of a high incidence or excessive recent occurrence of measles or other infectious disease preventable by immunization. The obvious indications are a deficiency in public health programs, specifically immunization and child health programs, or the failure of residents to use available services. These possiblities could be easily evaluated with data from the health index survey. Depending on results of this evaluation, the remedial measures considered might include the organization of immunization clinics, greater publicity for available programs, making services more convenient, or further inquiry to determine why services were not used.

Similar procedures would be followed in analyzing other indications of adverse health effects associated with disease occurrence. The specific problems to be explored will be evident from the results of analyses described in Part 5 of Methods and Procedures. Local situations, of course, determine the possibilities for developing remedial programs or measures.

## HEALTH SERVICES

Data derived from evaluation of community environment services and the environmental survey (Parts 3 and 4 in Methods and Procedures) together with those from the community profile, and other sources, will indicate the adequacy and needs for services relating to water supplies, sewage disposal, solid waste disposal, and general sanitation. Procedures for consolidation and analyses to characterize the entire community and various sectors of the community with respect to these services are included in Methods and Procedures. The state agencies responsible for community environmental services (see Appendix) should be consulted in the development of information from these data to assure conformance with pertinent regulation and procedure for developing applications for assistance should this be necessary.

Needs, demands, or expectations of availability of public health services will be derived from the health index survey. Some information will result from analysis of disease problems, as outlined above, and other will be obtained from direct responses of persons interviewed. This will indicate the extent of use and adequacy of the scope of existing services as well as the respondents' impressions of what additional services are desirable. Assistance should be sought from the state and local health departments and health planning agencies in evaluating these data and in formulating plans for modifying or adding services.

## PERSONNEL TO PROVIDE HEALTH SERVICES

The inventory of resources for health services (Part 6 in Methods and Procedures) provides the data for determining the adequacy of numbers and types of existing personnel and for defining additional needs. This analysis must take into account the requirement for health services determined in other phases of the evaluation and, most importantly, constraints to developing logistics imposed by characteristics of the community.

It is obvious that every conceivable health service cannot be provided to afford maximum convenience and accessibility to everyone who needs services. A minimum number of potential users is necessary to warrant, for example, the development of a hospital, or to attract a physician or dentist to locate in a specific community. Certain highly specialized services, such as burn and trauma units, can be supported adequately only in large centers of population. However, everyone who needs health services, including residents of small communities, should have timely access to appropriate service in a system that provides for prompt referral to the proper provider and facility.

In evaluating the adequacy of health services or in planning health services for a specific population or a community, both the needs for service and frequency of use of the services must be taken into account. Frequency of use depends on the type of service, the number of people to whom the service is accessible, and the number of persons by whom the service is needed. The idea that the national average ratio of providers to population (for example, one physician to 1,200 persons) can be achieved for every community regardless of size is untenable. Ways must be sought, however, to make adequate health services available to everyone regardless of the place of residence.

The first step in this direction is the determination of the availability of health services to residents of the community being evaluated. The data obtained by the inventory of resources for health services (Part 6 of Methods and Procedures) should be used for this purpose. The criteria of availability is that an appropriate provider, as well as other resources, must be accessible within a reasonable access time. "Reasonable" relates to both convenience and the urgency of need for which the service is sought. Some services must be close by and others can be at locations that require greater access time. Thus, an appropriate way to evaluate availability of health services is by determining the driving time required to reach the various types of services. To accomplish this, the different types of services must be classified according to the urgency of access or the requirement of convenience. For example, the life-saving emergency medical and surgical services must be readily accessible in the smaller communities, but immediate availability of elective surgical procedures is not essential. Similarly, certain public health services, immunization for example, must be convenient or they will not be used.

For purposes of evaluation and planning the various types of health services may be considered as follows:

## Primary Health Services

These include the health service first sought when medical care is needed and the preventive and other types of health services that should be easily accessible for frequent use. Preferably, they should be within 20 minutes driving time. Specific examples of types of primary health services are:

- First-aid and limited emergency service
- Diagnostic and screening services
- Preventive health services
- Limited prescription medication
- Non-prescription medication
- Counseling on health problems and sources of appropriate services
- Transportation

## District Health Services

These services are broader in scope and generally are not required as often, need not be as convenient to assure use, or be accessible as quickly as primary services. They can be at some greater distance, but preferably should be within 45 to 60 minutes driving time. The following types of services are included:

- Consultation and support for providers of primary services
- Ambulatory medical and surgical procedures
- Basic emergency services
- General dental services
- Basic clinical laboratory services
- Basic radiography
- General pharmacy services
- Transportation

Regional Health Services

Regional services are more specialized than district services but are required less frequently. The services generally should be accessible within 90 minutes driving time. The following types of services are included:

- Consultation and support for primary and district services
- Specialized medical and surgical services
- Complete emergency services
- Clinical laboratory services
- Radiological services including isotope diagnosis and therapy
- Opthalmic services
- General hospital services
- Complete pharmacy services
- Rehabilitation services
- Chronic care and long-stay institutional services
- Transportation

To complete the description, state health services centers provide services associated with a regional medical center -- for example, the state medical center -- administration of public health and sanitation, and planning. Organizational arrangements vary from state to state.

The data from the inventory should be analyzed to determine the location and adequacy of personnel to provide the various types of services in each of these groups -- primary, district, and regional. This will reveal any deficiencies that may exist for the community being evaluated and will suggest approaches to meet them. This planning should be done in collaboration with state and local health planning agencies.

## FACILITIES FOR HEALTH SERVICES

The adequacy of facilities for health services is evaluated the same as personnel. As indicated above, characteristics of the community -- including size of population -- determine the kinds and quantity of services needed. This, in turn, suggests the types and numbers of health personnel required. Knowledge of the services to be provided and the types of providers determines the types of facilities that are appropriate. The evaluation for a community should be made in the following sequence: first, the services needed should be defined; next, the type of personnel required to perform the services should be identified; and finally, the facilities appropriate for housing the services should be determined. The methods for evaluating the adequacy and needs for services and personnel were outlined in the preceding sections. The inventory of resources for health services also provides the data for evaluating the adequacy of facilities.

Consideration of facilities for health services should involve the state Health Planning and Development Agency and the Health Systems Agency.

# APPENDIX

## SOURCES OF INFORMATION AND ASSISTANCE FOR COMMUNITIES IMPACTED BY ENERGY DEVELOPMENTS

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